

Ex Libris

The Pennsylvania

Horticultural Society


Digitized by the Internet Archive
in 2016

https://archive.org/details/greenscene2161edby

SB 31
P45
V. 2



12839



THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

PENNSYLVANIA HORTICULTURAL SOCIETY
OCT 1973

SEPTEMBER • OCTOBER • 1973



16



2



7



12

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 1 Sept., Oct., 1973

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*Director*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Léonie Bell
M. M. Brubaker
John D. Corbit, Jr.
Barbara H. Emerson
Herbert W. Goodall, Jr.
John S. Kistler
Bebe Miles
Ralph M. Sargent
Phyllis G. Williams

DESIGNER
Charles Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 1, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1973

in this issue

1 Editorial *by Ernesta D. Ballard*

2 The Gateway Nursery . . . A Bicentennial Idea

7 Apartment Horticulture
by Phyllis Simpson

10 Classified Advertising

11 Digging for Information *by Ed Lindemann*

12 Two Heads are Better than One
by Ed Lindemann

16 A Symphony in Daffodils
by Bebe Miles

20 Books and the Green World:
Linnaeus and Garden Literature
by George H. M. Lawrence

23 Gardener's Word Guide

24 Growing Interests

Front Cover: The car-crusher located along one of Philadelphia's gateways offends some people and fascinates others. See the article on page 2 "The Gateway Nursery . . . A Bicentennial Idea."

Front cover and back cover photos by Edmund B. Gilchrist,

EDITORIAL

the organizations of gardeners



Gardeners are as gregarious as anyone. They like to get together to learn, to exchange experiences, to share knowledge, and to have a good time. A century or two ago, when the study of natural history was the order of the day, those who were interested in the natural history of plants formed horticultural societies. As the store of knowledge increased, the process of specialization began. First there came societies devoted to particular groups of plants such as ferns and mosses. More recently we have seen the emergence of societies that concentrate on a single family or genus—gesneriads, roses, lilies, African violets, rhododendrons, chrysanthemums, and so forth.

But not everyone wants to concentrate on plants. There are many gardeners, perhaps a majority, who are primarily interested in techniques, in garden design, in producing beautiful results in uses of plants and flowers. Such people have organized an impressive array of garden clubs and similar groups. There are also societies that are devoted to a particular field of horticultural activity such as bonsai, rock gardening, or growing plants under artificial light. And there are arboretums, botanical gardens, wildflower preserves and garden centers in bewildering variety.

The total number of horticultural organizations is staggering. The 1971 Directory of American Horticulture lists 57 plant and special interest societies, 47 professional, semi-professional and trade organizations, 23 major institutions offering membership services, eight national or regional garden club associations and several hundred gardens and arboretums to which one can belong. Well over half a million people are affiliated with these groups and institutions and the number is growing all the time.

In the Delaware Valley we have a wide selection: at least two dozen plant and horticultural societies, half a dozen arboretums and nearly 200 garden clubs. One of the functions of the Pennsylvania Horticultural Society is to assist these groups and to encourage horticulturists and gardeners to broaden their interests by joining more than one. We provide meeting rooms, help to stage shows, cooperate in arranging joint lectures and demonstrations, and maintain a library for the use of all. We also encourage all these groups to stage exhibits and displays at both the Philadelphia Flower and Garden Show, where they are seen by more than 100,000 visitors, and at the Harvest Show.

As we look into the future, we see the expansion of these efforts as one of our major goals. Some day, perhaps, not too far off, we would like to have a structure where we could bring many of the societies under one roof for meetings, shows and gatherings. We would like to have a staff and equipment that could handle their paperwork and assist them with the mechanical production of their newsletters. We would like to issue a publication that could handle news of all their various activities. Such a horticultural center would add tremendously to the satisfaction of living in the Valley. Admittedly, it's only a dream today, but isn't that what societies are for—to turn today's dreams into tomorrow's reality?

Ernesta D. Ballard

the gateway nursery a bicentennial idea

One of the little-noted benefits of the bicentennial is that it has forced Philadelphia to look at itself—to see itself through the eyes, not of an old acquaintance, but of a visitor coming to the city for the first time to celebrate the nation's birthday. Out of this self-evaluation have come a number of civic improvements and developments. The Delaware Expressway cover is an example in



Parts of the route from the airport into center city are lined with banks of native grasses and wild flowers. Clean-up is all that is needed. The diversity and naturalness of the cover is refreshing and requires minimum upkeep.

photos by Edmund B. Gilchrist, Jr.

the field of bricks and mortar. The Greater Philadelphia Cultural Alliance is an example in the field of culture.

Recently, Philadelphia's bicentennial introspection has brought forth another new idea—this time in the field of horticulture. The new concept is called the Gateway Nursery for reasons that will become obvious as its story unfolds.

The Gateway Nursery had its origin in the determination of the Mayor's Committee of Twelve, a group of business and civic leaders, to make the gateways to Philadelphia more attractive. They realized, as any thoughtful Philadelphian must realize, that, while the old approach to the city through Fairmount Park is as beautiful as any in the world, the drive to center city from the airport is a disgrace. The roads have not been landscaped or ornamented. No effort has been made to screen such objectionable sights as the graveyard for abandoned cars under the Penrose Avenue Bridge. Junk and debris have been allowed to accumulate along the roadside.

To do something about this situation, the Committee of Twelve appointed a Gateways Committee, including in its membership the director of the Pennsylvania Horti-

continued







Although white pines generally do not do well in a polluted environment, a few of the white pines along the airport road are thriving. Seed collected from these strong specimens will be propagated in the Gateway Nursery.

Base plantings around the Port Authority's buildings adjacent to the approaches to the Walt Whitman Bridge are healthy and vigorous—the result of proper selection. The trees are thornless honey locusts *(Gleditsia triacanthos inermis)* and the shrubs are privet *(Ligustrum ovalifolium)*, Japanese holly *(Ilex crenata convexa)*, and Japanese yew *(Taxus* cv.*)*.

PHS Gateway Committee

J. Franklin Styer, Chairman
Member of PHS Council
Charlotte L. Archer
Member of PHS Council and garden consultant
John S. Kistler
Member of PHS Council and landscape architect
Craig S. Oliver
Chairman, Department of Horticulture
Pennsylvania State University
John Rahenkamp
An ecology-minded designer and planner
Russell J. Siebert
Director of Longwood Gardens and an acknowledged plant pollution authority
Mrs. Morris W. Stroud
Member of PHS Council and an active member of the Garden Club of America
Ernesta D. Ballard
PHS Director
Julie Morris
PHS Horticultural Librarian
Ed Lindemann
PHS Horticulturist

cultural Society. The Society, in turn, recognizing that it would be called on for horticultural advice, organized its own Gateways Committee under the chairmanship of Dr. J. Franklin Styer, a botanist and nurseryman, who has long been associated with the Society. (The members of the committee are listed in box on this page.)

The obvious first step to make the city's gateways more attractive is to clean up the debris along the roads. This the city has undertaken to do. The second step, equally obvious but much more difficult, is to landscape the roads. Here the principal challenge is the environment. The newer approaches to the city, especially the approach from the airport, are heavily congested and polluted. Automobiles and trucks are often bumper-to-bumper across four traffic lanes, and the airport road runs beside two of the largest oil refineries in the Delaware Valley. Many of the trees and shrubs that have been planted have died or are doing poorly, and it is clear that new plantings of standard nursery stock would meet the same fate. Where, then, can the city turn to find plant material that will not only survive in this hostile setting, but also grow vigorously as ornamental plantings should?

This is the challenge to which the Styer committee addressed itself—and the answer it came up with has the simplicity and directness that characterize all truly seminal ideas. The way to get plant material that will grow in southwest Philadelphia along the route from the airport is to start a nursery in the area, a Gateway Nursery to provide trees and shrubs for the gateways.

The Gateway Nursery is conceived not as an ultimate producer of material for actual planting, but rather as a discoverer and developer of pollution-resistant strains that can be distributed to commercial growers for large-scale production. For example, the Styer committee noted on the airport road the row of white pines planted along a fence. Some have died and most of the remainder are sickly, but there are three or four notable exceptions that are thriving. When the Gateway Nursery is established, it will undertake multiplying these resistant trees. It will also repeat this on a larger scale by growing thousands of young trees of various species, selecting from these the most resistant and propagating them. The plants that show promise in the nursery can be distributed to growers with considerable confidence because this new kind of propagation nursery will be located in the same polluted area where the mature trees will be expected to grow.

This is the unique aspect of the Gateway Nursery concept—the idea of establishing the nursery in the target environment. There are a number of other efforts aimed at developing pollution-resistant strains, but all of them, so far as is known, are using synthetic pollution. The Gateway Nursery will be the first to establish breeding stock in the same conditions in which the mature plants are to be planted.

Because it will be a breeder and developer rather than a producer, the Gateway Nursery will not have to be large. The Styer committee believes that a satisfactory demonstration nursery can be set up on two or three acres as early as 1974, and that a minimum of five years' operation should be allowed for reliable evaluation. Operating costs would be about $35,000 a year. It is hoped that during the demonstration period, a Federal agency concerned with pollution might provide operating funds. If the nursery proves successful, it will be able to support itself in large measure by selling survivor plants to commercial nurseries.

So much for the long-range plan. In the meanwhile the bicentennial will have come and gone long before the Gateway Nursery can demonstrate its effectiveness, let alone produce tangible results in a significant degree. Clearly, a stop gap program is called for. To meet this need, the Styer committee has prepared a list of trees and shrubs, ground covers and annuals reputed and in many cases proven to be more than usually tolerant of city conditions. It recommends that these be planted in the modern fashion, i.e., in relatively crowded clumps and as mounds or small hills using mixed species of plants. The clustering of plants helps them to withstand the dry and dusty winds and to maintain a little extra humidity. The mounds lift the plants slightly above the auto

continued

emissions and allow for better drainage. The use of diverse species minimizes the risk of serious damage from any single pest or pollutant.

We envision the plant clusters located at strategic points with fairly long stretches in-between. To minimize the cost of maintaining the stretches, and also to add variety and interest, the committee recommends the use of rough ground covers punctuated at intervals with patches of black-eyed Susans, sunflowers, and sumac.

Even on this simple basis, the expense of the program will be substantial. Planting for most of the major gateways could cost as much as $1,000,000. Annual maintenance is $1,000 to $3,000 per acre. While these sums would not seem large on the national scene, they present real problems for the City of Philadelphia, which has no funds to spare.

Fortunately, there is a good chance that the city may not have to carry all the costs. Many of the gateway approach roads run very close to private property, and much of the planting should be done on privately owned land. Preliminary talks with some abutting owners indicate that if they are convinced the planting will have a good chance of survival, they will be willing to undertake it on their own because they believe that it will enhance their property value.

As the Gateway project stands today, it is a little more than a dream, but considerably less than a reality. Firm decisions remain to be made. Money must be appropriated. Plans must be drawn. An operating organization must be set up. Plant material must be located. But the need is clear, and the concepts are good. Who can doubt that sooner or later there will be attractive gateways to welcome visitors to Philadelphia and a Gateway Nursery of which Philadelphia will be justly proud. ●



Bank of wild flowers and weed trees would be attractive if dead wood were removed.

SUGGESTED PLANT MATERIAL FOR GATEWAY PROGRAM

Evergreen Trees
- *Deodar, *Cedrus deodara* 'Kashmir'
- Atlas Cedar, *Cedrus atlantica* 'Glauca'
- Jack Pine, *Pinus banksiana*
- *American Holly, *Ilex opaca*

Evergreen Shrubs
- *Laland Firethorn, *Pyracantha lalandi*
- Japanese Holly, all cultivars, *Ilex crenata*
- *Junipers, Spreading, *Juniperus* sp.
- Bayberry, *Myrica pensylvanica*
- Evergreen Barberries, *Berberis* sp.
- *Inkberry, *Ilex glabra*
- *Euonymus, cultivars
- Japanese yew, cultivars, *Taxus* cv.
- Rhododendrons, cultivars
- Azaleas (with caution)

Deciduous Trees
- *Ailanthus, *A. altissima*
- Callery Pear 'Bradford,' *Pyrus calleryana*
- *Hawthorn, Washington, etc., *Crataegus* sp.
- Linden, Littleleaf, Silver and hybrids, *Tilia cordata* and *T. tomentosa*
- Sophora (S. japonica)
- Sweet Gum, *Liquidambar styraciflua*
- Willow Oak, *Quercus phellos*
- Red Oak, *Q. borealis*
- Pin Oak (wet location), *Q. palustris*
- *Poplar hybrids, *Populus* hyb.
- Phellodendron, *P. amurense*
- Catalpa, *C. bignonioides*
- Willow, Weeping and Niobe, *Salix babylonica, S.b.* var. *auree*
- *Black Locust, *Robinia pseudoacacia*
- Birch, Gray and River, *Betula populifolia* and *B. nigra*
- *Flowering Crabs, *Malus* sp.
- Russian Olive, *Eleagnus angustifolia*
- Purple-leaved Plum, *Prunus cerasifera* var. *atropurpurea*
- Flowering Cherries, *Prunus* sp.
- Chinese Elm, *Ulmus parvifolia*
- Honey Locust, *Gleditsia triacanthos*
- Magnolias, Saucer and Sweet-bay, *M. soulangeana* and *M. virginiana*
- Yellow-wood, *Cladrastis lutea*

Deciduous Shrubs
- Roses, shrub, such as *R. multiflora*
- Roses, Climbing
- Red and yellow-twig dogwood, *Cornus stolonifera*
- *Winterberry, *Ilex glabra*
- In general, shrubs of rapid growth
- *Yucca, *Y. filamentosa*
- Bamboo (hardy)
- Wingbark euonymus, *E. alatus*
- *Sumacs, *Rhus* sp.
- *Privets, *Ligustrum* sp.

Vines and Ground Covers
- English ivy, cultivars, *Hedera helix*
- Hall's honeysuckle, *Lonicera japonica halliana*
- Creeping junipers, *Juniperus* sp.
- Virginia creeper, *Parthenocissus quinquefolia*
- Euonymus, cultivars
- Bog Grass, *Phragmites maxima*

Annuals
- Helianthus
- Rudbeckia

*highly recommended

apartment horticulture





1. Rubber plant, *Ficus elastica.* 2. *Sedum trelasei.* 3. Moses in the bulrushes, *Rhoeo spathacea.* 4. Small ferns and ivy. 5. Air plant, *Kalanchoë pinnata.* 6. *Dracaena marginata.* 7. African violet. 8. Calamondin orange, *Citrus mitus.* Background brandy snifters contain *cacti.*

photos by Edmund B. Gilchrist, Jr.

by Phyllis Simpson

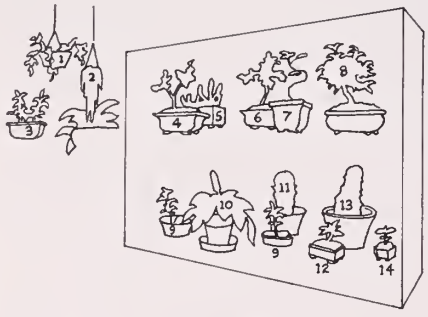
Phyllis Simpson is attending Ambler Campus, Temple University Horticultural Department. She will have her degree in June. She would like to use her background as a high school guidance counselor, combined with her horticultural training and experience, to work as a horticultural therapist or in adult education.

To those of us who live in apartments, the arrival of the horticulture magazines often brings into our lives one more frustrating experience. We read about the plants that should be wintered over in a greenhouse, the bulbs that should be brought into an unheated porch before being put into the living room, and about the plants that should be kept in the basement during their dormant season. It's almost as if the author speaks a language that is foreign to us. Apartment dwellers have no greenhouses, unheated porches, or basements. They do have, if they live in an older building with central heat, a generally overheated, extremely dry atmosphere; if they live in a more recently constructed place, there is usually forced hot-air heat, and there is no worse atmosphere for human or plant because the heat comes in uneven dry blasts. Apartment dwellers often have windowsills that are too narrow for plants, not enough sun because of the proximity of other buildings, and no place to put their plants out-of-doors in summer.

Yet, plant lovers are as hardy as the plants they love and they manage, in spite of all the wrong conditions, to raise beautiful and healthy specimens of a large variety of species. It is possible to arrange in a small corner a collection of cactus or of ivies, or to have an outstandingly lush rex begonia beneath a window that gets only the slightest amount of morning sun in winter. It is also possible to have indoor bonsai plants that do not require

continued





1. Curlylocks, *Hedera helix.* 2. Burro tail, *Sedum morganianum.* 3. Jade plant, *Crassula argentea.* 4. *Serissa foetida.* 5. *Crassula pseudolyco podioides.* 6. *Polyscias fruticosa.* 7. *Poncirus trifoliata.* 8. Dwarf pomegranite, *Punica granatum nana.* 9. Needlepoint, *Hedera helix.* 10. African violet "Top Dollar." 11. *Espostoa lanata.* 12. Dwarf natal plum, *Carissa grandiflora compacta nana.* 13. *Lophocereus schotti.* 14. *Buxus sempervirens.*

a cool wintering-over atmosphere but can be enjoyed inside all year long.

In a recent move from one apartment to another, I moved over sixty plants in my car; three very large ones had to be trusted to the movers (most of whom I find will be very gentle with plants). One four-foot section of living room wall which gets no direct light from the windows provides the perfect place for a variety of small plants, in my prettiest containers, set among black stones on the floor and on a low shelf; a gro-lux light, suspended from shelves above, is kept on day and night.

Originally, the light was left on twenty-four hours a day because I had difficulty reaching the switch. I kept putting off rearranging the plants so I could get at the switch, and I never got around to buying an automatic timer. After a few weeks, I reassessed the situation and realized that some of the plants that are not directly under the fixture would not have sufficient light to keep them in proper growing condition if the light were turned off for part of the day, so I have continued to have it on day and night. In addition to illuminating the growing things, it acts as a night light near the front door.

The light is a 16-inch gro-lux bulb under the usual 9-inch wide metal frame, suspended 29 inches from the floor. Immediately below it are African violets, Moses-in-the-bulrushes *(Rhoeo spathacea),* air plant *(Kalanchoe pinnata)*; calamondin orange *(Citrus mitis),* which is being trained as a bonsai and a miniature begonia in a bottle. Farther from the light are *Podocarpus macrophylla,* a small Norfolk Island pine *(Araucaria excelsa),* a small-leaved ficus *(Ficus diversifolia), Asparagus plumosus,* two tall glass cylinders, recently planted with small shade-loving material, and several small cacti.

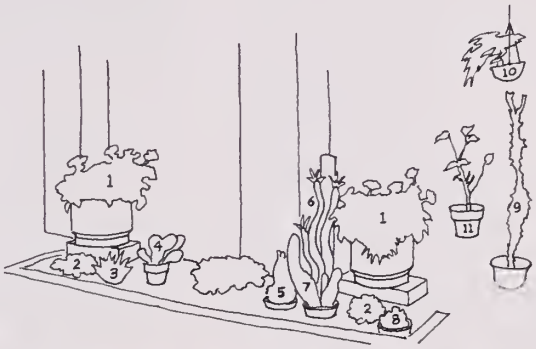
This is a varied group with different growing requirements. Most of the material does well here; some flourish for only a few weeks and then seem to need a change. They are moved elsewhere and replaced with something from another room. Thus, I have a constantly different and interesting little

garden as part of my living room, to be enjoyed each time I use the room. In many ways, this is preferable to having to go into a greenhouse to see my plants.

Against the opposite wall stands a "Mini-plantarium," put out by Lord and Burnham, the well-known greenhouse manufacturers, to show off plants to their best advantage in a living room. It consists of two shelves in a glass enclosure, 24" x 20" x 14", lighted from above, with sliding glass panels on the front and a glass top. The light is on 16 hours a day. In here, even an ordinary plant looks pretty, while my prettiest plants look wonderful. Miniature bonsai show to their best advantage. Right now I have *Serissa foetida,* natal plum *(Carissa grandiflora nana compacta*—a very long name for a plant in a tray only 2 inches long and ½ inch high), jade plant *(Crassula argentea),* and parsley aralia *(Polyscias fruticosa elegans),* in various stages of bonsai training. Other plants in the case are strawberry begonia, *Begonia semperflorens, Hedera helix* Needlepoint, and African violets.

The plantarium is the first thing noticed by anyone who enters the room and is a constant source of delight to me and to my visitors. If a plant does not do well here, it is replaced by one from another room and it is put in a different place to recover. But very few of them fail to flourish in this situation. The bottom shelf is covered with pebbles that are kept moist by adding water once or twice a week. The cover is kept raised at all times so that the air can circulate. Because of the moist atmosphere inside the case, the plants do not need such frequent

continued



1. Geraniums, petunias, sweet alyssum. 2. *Sempervivum* and *Sedum* used as ground cover. 3. *Haworthia margaritifera.* 4. *Cleistocactus strausi.* 5. *Astrophytum myriostigma.* 6. *Euphorbia mammillaris.* 7. *Borzicactus icosagonus.* 8. *Mammillaria bocasana.* 9. *Euphorbia grandicornus.* 10. Tuberous begonias. 11. Common fig, *Ficus carica.*



watering as those in the rest of the room. This is particularly helpful with the tiny bonsai which normally dry out more quickly than other plants. When I leave for a weekend, I do not have to be concerned about the plants here.

In a space between the sideboard and the wall, just 28 inches wide, I have arranged a dozen cactus plants, some on the floor and some on small stands so that they are at different levels and can readily be seen. They get only indirect light from the nearest window, but that is all they need in the winter and they thrive. In summer, they go outdoors. At night they are spotlighted for several hours by a ceiling light placed so that it shines directly on them.

In another room I have metal bookshelves on which I baby along seedlings or the plants I have brought back from the living room. I also manage to root cuttings and plant a few seeds, although the lack of space limits this activity. The shelves stand against a wall by an eastern window which gets full sunlight until about 11 a.m. As is usual with a forced hot-air heating system, tne room suffers from alternate periods of too much dry heat blowing into it at a temperature of about 120 degrees, which brings the room temperature up to 73 degrees, and cooling off periods when the temperature goes below 68 degrees. The metal-framed windows allow cold air to seep in and on very cold mornings the windows are covered with frost. I think the frost may have a beneficial effect on the plants, because as it melts it provides much-needed humidity to the room. I have not been too successful raising things from seed, and I feel such limited success is not worth the effort that it takes in an apartment.

During the winter, the difficulty with the forced hot-air heat is constant. It is necessary to place most plants where they will be near the windows but out of the currents of hot air. The hot air registers are generally on the floor beneath the windows or just below the ceiling over the windows and create another difficulty to be overcome. I have partially solved the problem by using curved plastic deflectors that are made to fit over the registers, are adjustable to various lengths, and attach by built-on magnets. The magnets make them usable on registers on the walls or ceilings. They permit the air to be turned toward the center of the room or away from it. I bought them in a Philadelphia department store and they are probably also available in any large housefurnishing store. The plants are sprayed daily with a water mist and the watering can is kept handy to use on anything I notice may be dry as I pass through the rooms.

I am fortunate to have a terrace on which many of the plants can spend the summer, regaining the vigor they may have lost during the winter. The cacti and succulents spend five months outdoors on a three-tiered stand and make all of the year's growth during this period. Grape ivy, ficus and begonias thrive outdoors. One side of the terrace gets morning sun from the northeast and the other side gets afternoon sun from the southwest. Some blinds may be lowered for human as well as plant comfort. The breezes are cooling, but often too drying, so that a constant eye must be kept on the soil to make sure it does not dry out. Any plant that is tall or top-heavy is too easily knocked down by the breeze. Even though they benefit from the summer vacation outdoors, the danger of being knocked over makes it wiser not to put out the tall material.

In spite of all my efforts, there are some things that have not done well. I have had to give up trying to raise ferns. And my asparagus, which requires growing conditions similar to the ferns, is the last of a group that has died and it needs constant watching. The Norfolk Island pine is on its way out. Any number of pots of *Hedera helix* Shamrock and *Hedera helix* Needlepoint have died in spite of frequent spraying and much attention. The only ones alive are the two baby bonsai in the plantarium. On the other hand, the cacti and succulents do extremely well and there is generally a blooming begonia or African violet to give some color.

I seldom see any insect pests, which might be because of the extra-dry atmosphere that discourages insects and plant diseases.

When I succeed in my efforts at growing things in an apartment under less than desirable conditions I am excited. When I fail because of the adverse conditions, I have to tell myself that even those who have the greenhouse and the cold porch and the basement do not always succeed, either. And when I do fail, I invariably tell myself: "Next year, I think I'll try to"

●

classified ads

The Harvey Smith Ladew Topiary Gardens on the Jarrettsville Pike, 14 miles north of Towson, Maryland (Route 146), will be open to the public every Sunday through October from 1 p.m. to 4 p.m. Admission $2.00.

Special tours on other days may be arranged by appointment. Call Mr. Preston, 692-6069. Special group rates.

Polly Fairman's Indoor Bonsai Greenhouse and Japanese Gardens, 103 Mt. Lucas Road, Princeton, N.J. 08540. By appointment. 609-924-3202. Indoor Bonsai a specialty. Gifts for plant loving friends and relatives. Supplies, planters. Saturday morning workshops and clinics for all Bonsai problems. Grooming and boarding. Japanese landscaping. Lectures for garden clubs at Poly-En Gardens.

Wanted: Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd., Media, Pa. 19063. Telephone Ben Palmer, TR 2-7206.

FOR SALE. Plants for house and greenhouse, including rare and hard to find varieties. Call TU 4-0497.

Horticultural Pottery, Terra Cotta Fountains, Topiary Frames, Water Gardens. We do custom designing. 767 Chester Creek Road, Chester, Pa. 19015. Call 874-2266.

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.



digging for information

HORTICULTURAL CORRESPONDENCE

by Ed Lindemann,
horticulturist

daffodils

Q. I have a small backyard garden in West Philadelphia. I have enclosed some specimens that are buds from my white daffodils. The plants come up and look normal; they bud but they never bloom. The buds have not been maturing for the last three years. The plants themselves are still vigorous.

The daffodils were planted about eight years ago and for several years bloomed profusely. They have increased in number. I haven't moved them, and I don't know when or how to do it. I feed the roses behind the daffodils in the bed with 7-7-7 fertilizer (Star Rose Food) and the roses are doing well. I haven't fed the daffodils, because I don't know what they like or when they like it.

Why does this happen to the daffodils, and what can I do about it?

Thank you for the many pleasures of PHS membership. I am not yet an accomplished gardener, but I hope to become so.

T.J.S., Philadelphia

A. I can find no evidence of disease or pest affecting your plant. I suggest that you dig up the bulbs, separate and replant them. When doing that it would be a good idea to work some 5-10-5 or other general fertilizer into the soil and also add some bone meal. I am sure that the only problem affecting your plants is that they are overcrowded and suffer from a lack of food.

african violets

Q. All of my African violets seem to gradually get spots. Some leaves dry out. Can you tell me what's wrong with them?

H.F., Cherry Hill, N.J.

A. The leaves you sent show that the plants are suffering from chlorosis. These irregular, yellow, ring and line patterns frequently appear on African violet leaves. They are usually caused by some unfavorable cultural practice, very often a sudden chilling of the leaves with cold water. The water you use should be at room temperature; water that varies more than 10 degrees very often will cause this type of spotting. It is also important not to let the plants become too cool at night.

holly or osmanthus?

Q. How can I tell whether the two leaves I've enclosed are holly or osmanthus? Also, how do you tell a male holly plant from a female? Are the leaves different?

M.M., Philadelphia

A. The leaf specimens enclosed in your letter are American holly *(Ilex opaca).* Osmanthus and holly can be distinguished by the position of the leaves: osmanthus leaves are opposite and holly leaves are alternate.

It's impossible to tell by the leaves of the American holly whether the tree is male or female. The only way to tell is when they are in flower: the male flowers have stamens and the female flowers have pistils. Only the female holly bears fruit.

grass seed on slope

Q. My yard, at the rear, slopes downward and every time it rains the water run-off from my neighbor's yard washes any grass seed away that I plant. My main concern at the present is that it is starting to carry away the soil. Is there any way to firm up this section and give seed time to root? With so much rain lately I hesitate to waste more money on grass seed.

M.F.G., Roslyn, Pa.

A. I've had some success using strips of sod on a slope horizontally and seeding in-between. This cuts down on the expense of completely sodding the entire area and the sod strips will help prevent erosion until the seeded areas can take over. The strips can be pegged into the soil to hold them.

wood chip trails

Q. I am a principal in an engineering firm that specializes in major subdivision planning.

As a member of PHS, I am interested in obtaining information regarding the use of wood chip trails in major subdivision developments to maintain natural beauty throughout the developments. My concern is the longevity of these wood chips and whether they will attract undesirable insects.

For the most part the wood in the developments would be pine, black oak and white oak. Please advise me as well regarding the depth of the wood chip trails.

D.H.H., Marlton, N.J.

A. I have found the use of wood chips for walks quite satisfactory and have not encountered any insect problems. Wood chips make a soft springy and attractive path and should be confined between some type of header. All natural woods are susceptible to bacteria or insect infestation unless they are properly drained. Since the wood chips hold water, good drainage should be provided. I believe that the soil in your area is naturally sandy and will aid in draining the area. I suggest a depth of two to three inches for paths. The soil underneath should be treated to prevent the growth of weeds.

I recommend that you also contact some of the local arboreta in the Delaware Valley to find out what their experience has been using wood chips for paths.

●

This site presented grading problems as well as varied exposures ranging from shade to bright sunny areas. The owner consulted a landscape designer for engineering information as well as plant selection. The homeowner completed more than half the work himself.



TWO HEADS ARE BETTER THAN ONE

the do-it-yourselfer who collaborates with a professional may prevent costly mistakes in time, money and effort.



by Ed Lindemann

Lindemann is a landscape designer with a B.S. degree from the Delaware Valley College of Science and Agriculture. He is a staff horticulturist at PHS.

photos by author

The designer chose heavy, coarse plant and construction materials to complement and balance each other as well as a rustic site. The homeowner did 100% of the work himself.

With inflationary Phases becoming as regular as seasons, people are concerned with how they spend their money. Money spent on landscaping, garden construction and plants is no exception. Our present economy forces many of us to do-it-ourselves. Unfortunately, we often end up spending more on our do-it-yourself project and get inferior results, than if we had hired a professional at the start. What is called for is a collaboration between the professional and the do-it-yourselfer.

Fortunately, "unskilled" workers can successfully complete many phases of landscaping if they follow professional advice. Anyone starting a new garden or renovating an existing one would benefit from the advice of a professional: a landscape architect, designer or consultant (also often referred to as a horticultural consultant). Each of these professionals provides a somewhat different service.

- A landscape architect should have a B.S. or M.S. degree in landscape architecture. He or she may or may not be registered, depending upon individual state requirements. The landscape architect can prepare detailed plans both architectural and prospective. He has enough engineering background to design and make specifications for exterior construction such as walls, drives and pools as well as planting plans.
- A landscape designer has had formal training in horticulture and design, a course of study most often referred to as ornamental horticulture. The landscape designer may know more about plant material than the landscape architect; however, he does not have the technical training to prepare detailed construction, grading and specification drawings.
- The landscape or horticultural consultant has a solid background in horticulture either through formal training or practical experience. The landscape consultant usually does not prepare any type of plan, but rather gives written or verbal advice. Many offices employ all three professionals to work together on projects.

what the professional can give you

No designer can prepare a worthwhile plan for your property without visiting the site, including the house. A truly well-designed landscape is as attractive when viewed from inside the house as it is from the street.

An in-depth interview should take place between the consultant and client. The question and answer period gives the consultant a feeling of what the client expects from his or her property: what kind of plant material is required, color scheme preferred and requirements for entertaining, children, recreation and animals.

A consultation with any professional will probably cost between $100-$150 for a one-day session. Expensive? Not when you compare it with the cost of plant material. Four or five 2' to 3' rhododendrons or two 10' shade trees may easily run $100. Planted incorrectly in the wrong location, they probably will not survive. The cost of the professionally prepared plan will vary. The size and complexity of the project as well as the individual designer will be reflected in the cost. (PHS will furnish upon request a list of landscape architects, designers and consultants. In most cases, minimum consultation fees, style of work and other information are also listed.) Following the consultation, the next step in do-it-yourself landscaping is to develop your overall plan with the professional. More suburban landscapes outgrow their allotted space in five years because of overplanting than because of improper or nonexistent pruning practices. If you have a new property it is well worth the investment to have a professional prepare a complete plan. With a good plan and reasonable workmanship, the project can be completed over a period of years and not look like a patchwork quilt.

On a finished plan the designer will identify the plantings, the construction materials and drives, walks, fences, walls and pools. Areas that will not be created immediately should be marked as "future brick wall" or "future evergreen screen." Having the overall plan to start with will help you to avoid planting areas to be used for some other purpose years hence. It is both costly and extra work to landscape an area if it is to be dug up in a short time to make room for a swimming pool or an addition to the house. The overall plan should also include instructions on how to handle the existing landscape, if any, so that new and old will blend together. Plants to be pruned or removed should be so marked.

Along with any sketches and plan drawings a complete plant list should be supplied to the client. The list should include all new material to be planted giving both botanical and common names; the size of the plants to be used, whether they should be balled and burlapped or bare root; and general remarks about spacing and staking requirements and costs. (See model plant list on this page; model plan appears on page 13.) continued

QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
6	A.D.W.	Azalea Delaware Valley White	White Azalea	18"-24"	B&B (balled & burlapped)
3	A.H.	Azalea Hinodegiri	Scarlet Azalea	12"-24"	B&B
3	B.	Betula Albo Luciniota	Cutleaf Weeping Birch	8'-10'	B&B (Guy)
2	I.C.	Ilex Crenota Convexa	Japanese Holly	18"-24"	B&B
4	I.O.	Ilex Opaca	American Holly	4'-5'	B&B
5	J.S.	Juniperus Sargenti	Sargents Juniper	15"-18"	B&B
7	K.L.	Kalmia Latifalia	Mountain Laurel	18"-24"	Bare root
15	L.	Ligustrum Ovalifalium	California Privet	18"-24"	B&B
1	S.M.	Magnalia Stellata	Star Magnalia	30"-26"	B&B
—	—	Pachysandra	Japanese Spurge	Raated cuttings	Space 6" apart
1	P.P.	Picea Pungens Glouco	Blue Colorado Spruce	6'-7'	B&B (Guy)
4	P.J.	Pieris Japanica	Andromeda	18"-24"	B&B
2	P.M.	Pinus Montana Mughus	Mugha Pine	15"-18"	B&B
5	P.S.	Pinus Strobus	White Pine	6'-8'	B&B (Guy)
1	R.M.	Rhadadendran Maximum	Raseboy Rhadadendron	3'-4'	B&B
5	R.R.	Rhadadendran Roseum Elegans	Hybrid Rhadadendron	18"-24"	B&B
1	S.V.H.	Spiraea Vanhouttei	Vonhoutte Spirea	3'-4'	B&B
1	S.V.	Syringa Vulgaris	Comman Lilac	3'-4'	B&B
12	T.	Taxus Cuspidata Densifarmis	Dense Yew	15"-18"	B&B
9	A.	Thuja Occidentalis Nigra	Dark American Arborvitae	3'-4'	B&B
1	H.	Tsuga Canadensis	Canadian Hemlock	30"-36"	B&B
1	V.S.	Viburnum Sieboldi	Siebold Viburnum	3'-4'	B&B

Typical plant list accompanying landscape design.

how to read the plan

Many people find it difficult to understand an architectural plan when they first look at it; however, landscape plans are not difficult to read. First, try to orient yourself in the plan: locate existing structures, for example, a house, a garage or a driveway. Next examine the "key." Pebbles, concrete, brick and other material will all be shown by different symbols. The key will also include symbols for plant material. Evergreens, deciduous material, ground cover, and vines will each be shown differently.

As you study the plan you will begin to get a feeling for the proposed design. Scale is important. The scale in inches or fractions of inches equals feet will be labeled on the plan. When working from a plan, have a ruler or scale that matches the measurements on the plan. Two scales are commonly used for architectural type drawings. The "architects" scale has the inches divided into halves, quarters, eighths, and sixteenths. The "engineers" scale has the inches divided into tenths, twentieths, thirtieths, fortieths and so on. Because landscape architects often work with plans prepared by an engineer, they generally use the engineer's scale.

When transferring the measurements from paper to the ground, I find it easier to work with a homemade calibrated rod rather than with a long measuring tape. To make the rod, take a six- or eight-foot long piece of wood and mark it off in six-inch increments. You will have an oversized ruler that enables one person to measure instead of the two people required if a tape measure is used. When laying out your plan on the property, place labeled stakes for each plant in the location it is to go. After you have done that, study the stakes picturing the plants they represent in your mind; if adjustments have to be made it is easier to move stakes than plants.

The PHS Library has an excellent selection of how-to books on garden construction covering subjects from bed and lawn preparation to building a stone wall. Be sure the construction information applies to where you live. Structures designed for Florida or Southern California may not be practical for the Delaware Valley area. For example, all roof type structures built in the northeast must be able to support heavy snows; walls must withstand frost heaving. If you find construction details to follow, check their practicality first. If you are in doubt, check with a professional; often lumber yards or stone quarry people are helpful.

Once you have your plan of attack laid out you are ready to start the physical activity. If you are a beginner or coming out of semi-retirement (once addicted you never really retire from gardening), pace yourself to keep from overdoing it. Take frequent "breathers," step back and see what you've accomplished. Not only will you feel satisfaction, but noticeable mistakes can be easily corrected when caught in time. Most gardeners who really enjoy what they are doing become workaholics who stop only when they are ready to drop from exhaustion. They feel they have to get the rest of a hedge clipped or the last ten feet of the wall built before sunset. It's the greatest therapy in the world and it doesn't cost $50 an hour.

the plant material

When plant material is delivered, have it unloaded as near to the site of planting as possible and eliminate as much extra handling as possible. Gravel, sand or bricks should not block a driveway. More than one landscaper has found his auto trapped in the garage because a ten ton pile of sand was dropped in front of the garage door. If a large load of plant material is delivered and it is impossible to plant it immediately, be sure to keep the material watered. If the material is balled and burlapped, heavy mulching with damp peat moss, wood chips or soil will help keep the plants from drying out. Spray the foliage with water frequently to prevent wilting. If at all possible store the plants out of direct sunlight.

Plant the largest trees and shrubs first. They are the hardest to move and position. Fill in with the smaller shrubs after the big ones are in place. Check all plants for their best side; this practice is called "facing the plant." Walk around the plant to study its natural shape and growth habit. After the right side has been chosen, tag that side with a piece of string. When you come back to plant the shrub, the string indicates which side is to face out.

Prune most material when it is planted or transplanted. Pruning reduces the amount of foliage that the root system has to support. Consult a good pruning book if you are not sure exactly how the individual plant should be pruned. Don't be afraid to sacrifice a season's flowering or fruiting; it is more important that the plant be pruned at the time of planting.

A few general rules will help to decrease the amount of plant failures. Prepare a large enough hole for each plant; the hole should be dug one-third larger than the diameter of the ball or container that the plant is in. Save the excavated soil when digging the hole. Mixed with about one-third peat moss or compost it will provide backfill for the hole. Do not plant material any deeper than it had been growing at the nursery. Remember that the backfill will settle somewhat so plants can be set in the hole a little on the high side. The plants will settle naturally in time. When filling in the hole add the backfill a little at a time and then water well. The water will work the backfill mixture securely around the ball of the plant and prevent air pockets which cause the roots to dry out. After the plant has been completely backfilled form a saucer with the remaining soil. The saucer retains the water near the roots.

Small plants such as annuals, perennials and ground cover should also be watered heavily after they are set in the ground.

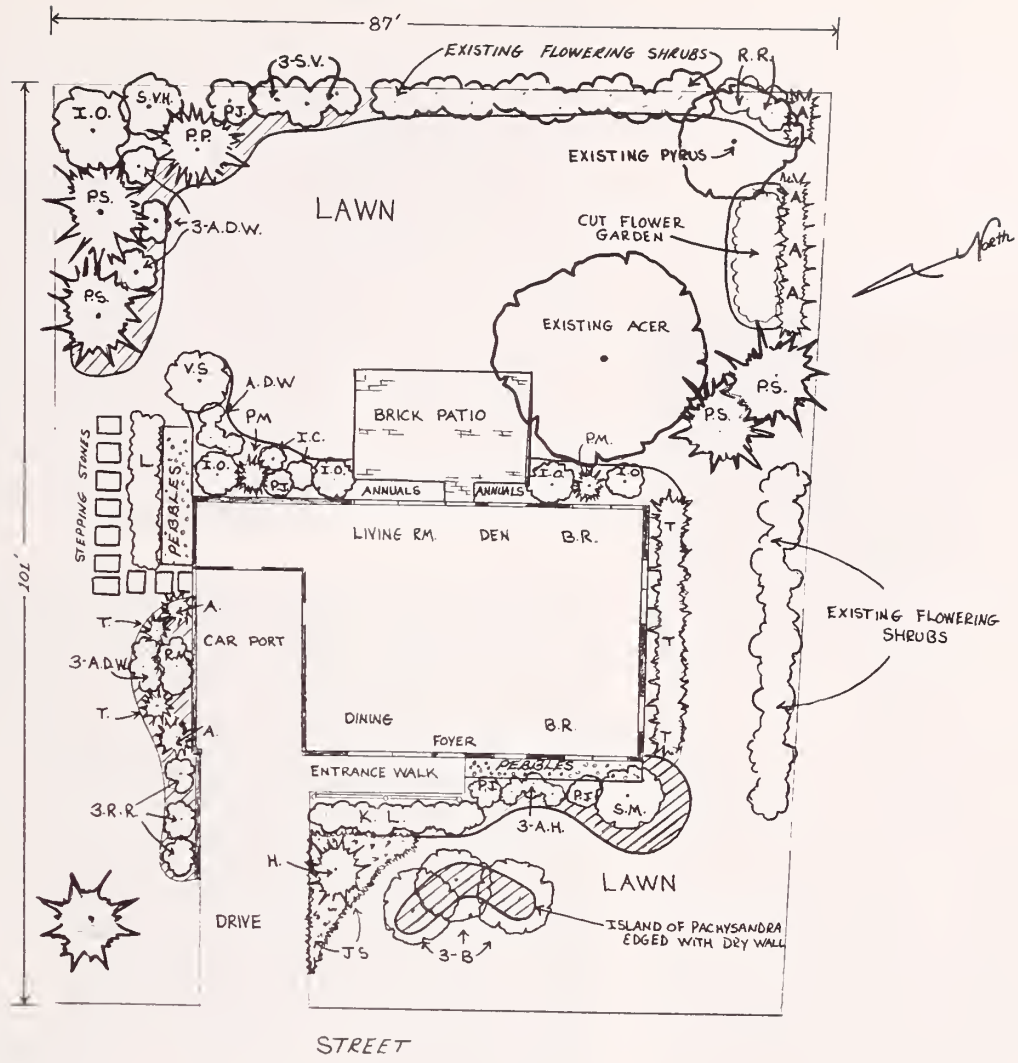
All newly planted trees or large shrubs that will create wind resistance should be staked or guyed to prevent the wind from rocking the plant. Staking or guying will support them until the roots become established in the surrounding soil. They should be left on the plant for a year.

Rules and suggestions can go on and on but as with any endeavor, experience is the best teacher. Every landscaper loses a plant occasionally or has a stone wall heave during a severe winter. Don't be discouraged if it happens. Try to find the cause of your failures. Could the problem have been avoided?

With professional guidance and planning, big mistakes can be avoided. Combined professional planning and do-it-yourself labor offers the gardener a practical solution to beautifying property on a limited budget. The successful collaboration will be satisfying for many years.

●

MODEL PLAN



KEY

BROADLEAF OR DECIDUOUS MATERIAL

GROUND COVER

NEEDLELEAF EVERGREEN

PEBBLES

SCALE

0 10' 20' 30'

This planting plan was designed for a small property (approximately 8,000 square feet) in a Bucks County housing development. The glass wall along the dining room faces onto the street and the glass wall along the living room looks into the garden. Privacy from the street and surrounding properties as well as attractive views from inside the house were the primary objectives of the owners.

Evergreen material was used extensively to achieve year-round screening. The owners of the property enjoy the gardening and pruning needed for such a heavily planted area. Note the plantings in the left rear corner of the property where pines, hollies, pieris and azalea were massed to screen a swimming pool on the neighboring property. Not only does the planting successfully screen the view, but acts as a sound buffer.

The island of weeping birch on the front lawn provides a privacy screen between the dining room glass wall and street without a closed-in feeling. When viewed from the street, the three matched birch are accented by the background of mountain laurel.

The use of bulbs along with the broadleafed evergreens provides color from early spring to early summer. Containers of annuals and chrysanthemums placed on the patio and spotted along the rear border provide color until frost.

Except for the island of birch, the lawn areas were left open to allow easy mowing.

All planting beds contain ground cover to eliminate the work of mulching and weeding.







Upper right — Cheerfulness

Above — Thalia

At right — Peeping Tom

Far right — a jonquilla hybrid—no name

photos by author

A SYMPHONY IN DAFFODILS

by Bebe Miles

Bebe Miles is author of *Bluebells and Bittersweet: Gardening with Native American Plants,* Van Nostrand, Reinhold, 1970, and *The Wonderful World of Bulbs,* Van Nostrand, 1963. Ms. Miles is a garden photographer and lecturer and is on the Board of the Doylestown Nature Club. She is an officer of the Bowman's Hill Wildflower Preserve.



A great orchestra (as any Philadelphian knows) combines the talents of many into a harmonious whole. Even a Eugene Ormandy would be hard put to produce great music if he had nothing but trumpets at his disposal.

So too in the garden. Everyone loves the big impressive trumpet daffodils, but the virtuoso gardener knows there are other fine types with which to round out the spring symphony.

Daffodil specialists have developed formal classifications for all the different kinds of narcissi. Since the best bulb catalogs list their offerings by types, it is not hard to make your order out without actually learning the whole formal system. You will, however, begin to appreciate the great variety available if you glance for a moment at the accompanying chart.

What can all this do for your garden? By choosing your daffodils from different groups, you can have bloom earlier and later than the trumpets. And you will have much greater variety of color, size and flower shape too.

Probably the most important consideration is extending the bloom season. If you are anxious for spring, the hybrids from the cyclamineus division will become your favorites. One of the best and most dependable is February Gold. Here at Doylestown this sturdy yellow beauty has never actually opened in February, but it seldom fails to brighten our March. Nor should you overlook Peeping Tom with its long exaggerated cup.

While smaller-flowered and shorter of stem than a trumpet, both these cyclamineus hybrids make sturdy plants, usually taller than 12 inches. Also widely offered are Dove Wings, Charity May and March Sunshine. Two cyclamineus miniatures are Little Witch and Beryl.

You can push your daffodil season ahead at least an extra week by planting some of these early birds in an especially warm niche. Up against a south wall or even to the south side of a large rock does it.

At the other end of the daffodil spring there are tricks too. Any narcissus will open a little later if it is in a cool spot, away from buildings and preferably with a few hours of afternoon shade. Such a position is obtained more easily by planting the bulbs on the eastern side of a large bush or deciduous tree. (This touch of shade is also valuable for daffodils with bright-colored cups since it helps retain their color.)

You can load the dice even more in your favor by choosing daffodils from the later-blooming types. This includes in particular the triandrus hybrids and the jonquilla hybrids. The species from which these derive have given them late-flowering genes. Almost without exception any daffodil from those divisions will prolong the show.

At this point I must confess to less than pure objectivity, for Thalia, one of the white triandrus hybrids, is my own favorite of all the great daffodil clan. Like the others of this division it bears several dainty flowers per stem. My records over many years show that it regularly begins blossoming nearly a month later than February Gold, for example, and takes hot weather quite well.

The same can be said for Silver Chimes, Rippling Waters and Tresamble, while Liberty Bells is a fine primrose sister. All grow from 12 to 16 inches high. Two tiny triandrus standouts, perfect for the smallest rock garden, are April Tears and Hawera; neither exceeds 8 inches.

Equally good for extending the season are the various jonquilla hybrids, and here there is the bonus of exquisite perfume, for these are surely the sweetest of all daffodils. Some good hybrids to look for: Tittle-Tattle, Bobbysoxer, Chérie and Lintie. All these have rush-like foliage which never seems to be intrusive, even when it is drying up.

Poeticus narcissi are also fragrant and late-flowering. All have white perianths (the outside petals), and the small eyes or cups are red-rimmed. Actaea, Cantabile and the old Pheasant's Eye *(recurvus)* are good choices for garden decoration.

From other divisions, daffodils with late habits I can recommend include Geranium and the double Cheerfulness (tazettas) and Frigid and Polar Ice

continued

(small-cups). Many of the so-called pink daffodils are also later-flowering, certainly much farther along in the season than the trumpets.

This would be a good time to review the color situation. If you grow only trumpets, you must be content with yellow and white. There are fine trumpets in both, and there are some bicolored ones too, most of them with white perianths and yellow cups although Spellbinder reverses the combination.

When you add large-cups and small-cups from the next two divisions, however, your color range broadens immensely. Indeed, one must place some of these daffodils carefully lest they fight with each other. Six to a dozen of a single variety planted as a group make for a splendid show, however. One trick is to intersperse pure white varieties or those with white perianths and lemon or primrose cups between groups with red-orange crowns. Binkie, Ice Follies, Green Island, Duke of Windsor and Lemon Cup are good such dividers as well as fine flowers in their own right.

A daffodil falls into the large-cup division if its cup is only slightly shorter in proportion to the length of the petals of the perianth, so the flowers are still very sturdy in that class. The small-cups on the other hand are daintier simply because their cups are much smaller. In many catalogs both these divisions are lumped together as weatherproof daffodils.

For a really bright note choose a few with yellow perianths and reddish cups. I can particularly recommend Red Goblet, Scarlet Elegance, Confuoco, Chungking and Jezebel, but they are only a few of those available. Apricot Distinction is even more unusual with peachy apricot outer petals and an orange cup.

Equally breathtaking effects come from those in these groups which have white perianths and orange-red cups. To pick again only a few favorites: Kilworth, Orange Bride, Firetail, Flower Record and La Riante.

When it comes to the "pink" daffodils, you must remember that it is still a shade that leans more toward apricot than rose. Nevertheless these are interesting and especially lovely with springtime blues. Each year brings new ones, but for year-in, year-out garden use I still favor two of the oldest (and certainly most reasonable): Mrs. R. O. Backhouse was the first (1923) and Louise de Coligny dates from 1948. Chérie from the jonquilla division is another pinkish darling.



Mol's Hobby

Form adds interest to the garden too. "Daffodil" no longer means necessarily a flower with a cup. In some the crown has broken into petals instead. There are several variations.

Double daffodils tend to last longer in flower than any other type if given some protection from the rain. The bare branches of a deciduous tree are enough to do this fairly well, but make sure you plant on the outer fringes so the daffodil foliage gets enough sun. A mulch of wood chips is wise too, for rain weights down the doubles, and they pick up a lot of dirt with all those petals if beaten down on bare earth.

Cheerfulness is my favorite double because it is so dainty and fragrant. Golden Ducat actually is a double trumpet sport and quite striking. Other good doubles include Snowball, Texas, White Lion and Rose of May. Erlicheer and Pencrebar are fine miniature doubles.

Another novelty is the so-called "split" daffodil. Here the corona petals are often so separate that the flower simply does not really look like a daffodil. I am of two minds about these. Mol's Hobby, one of the older ones (1960), still says daffodil to me although its corona petals are actually interspersed with the perianth; it has a wonderful fragrance. Papillon Blanc is another I love, but Split and her many new sisters are something else. Try one and make up your own mind. They are admittedly something different.

Variations in size have already been hinted at. Study your catalogs carefully if you need some of the petites for a rock garden or other intimate spot. The true species daffodils usually qualify for such treatment, but they lack hybrid vigor and are often capricious. Lady Bee and Wee Bee (officially a trumpet) are two of the best miniatures and *jonquilla simplex* one of the most dependable species. Some of the loveliest hybrid miniatures will be found among the jonquilla, triandrus and cyclamineus listings.

For success with any daffodil do remember that they must have good drainage, do best with early fall planting and absolutely must be allowed to develop good foliage after blooming. Failure to heed that last admonition will mean fewer flowers in subsequent years.

And have fun, for a closer look at your bulb catalogs this fall will yield really extended daffodil bloom next spring. ●

guide to daffodils mentioned in the article

Name	Description	Division	Time of Bloom
February Gold	Smaller than trumpet, 12" stem	Cyclamineus hybrid	Very early
Peeping Tom	Very elongated cup, 12" stem	" "	Very early
Dove Wings	White perianth, primrose cup, 12" stem	" "	Early
Charity May	Yellow, much reflexed, 12" stem	" "	Early
March Sunshine	Miniature	" "	Very early
Little Witch	Miniature	" "	Early
Beryl	Miniature	" "	Early
Thalia	Several flowers/stem, white	Triandrus hybrid	Late
Silver Chimes	Several flowers/stem, white	" "	Very late
Rippling Waters	Several flowers/stem, white	" "	Late
Tresamble	Several flowers/stem, white	" "	Very late
Liberty Bells	Several flowers/stem, yellow	" "	Late
April Tears	Miniature	" "	Late
Hawera	Miniature	" "	Late
Tittle-Tattle	Very fragrant yellow flowers	Jonquilla hybrid	Very late
Bobby-Soxer	Miniature	" "	Very late
Chérie	Ivory perianth, pink cup	" "	Late
Lintie	Very fragrant	" "	Late
Actaea	White perianth, red eye	Poeticus narcissi	Late
Cantabile	White perianth, red eye	" "	Late
Old Pheasant's Eye	White perianth, red eye	" "	Very late
Geranium	Bunch flowering	Tazetta hybrid	Late
Cheerfulness	Bunch flowering, double	Double	Late
Frigid	White, emerald eye	Small cup	Very late
Polar Ice	White, emerald eye	" "	Late
Spellbinder	Yellow perianth, white cup	Trumpet	Mid-season
Binkie	Yellow perianth, white cup	Large cup	Mid-season
Ice Follies	White perianth, ivory cup	" "	Mid-season
Green Island	White perianth, lemon cup rim	" "	Mid-season
Duke of Windsor	White perianth, flat yellow cup	" "	Mid-season
Lemon Cup	White perianth, frilled lemon cup	" "	Mid-season
Red Goblet	Yellow perianth, reddish cup	" "	Mid-season
Scarlet Elegance	Yellow perianth, reddish cup	" "	Mid-season
Confuoco	Yellow perianth, reddish cup	" "	Mid-season
Chungking	Yellow perianth, reddish cup	Small cup	Mid-season
Jezebel	Yellow perianth, reddish cup	" "	Mid-season
Apricot Distinction	Peachy apricot perianth, orange cup	" "	Mid-season
Kilworth	White perianth, orange-red cup	Large cup	Latish
Orange Bride	White perianth, tangerine cup	" "	Mid-season
Firetail	White perianth, red cup	Small cup	Mid-season
Flower Record	White perianth, orange cup	Large cup	Mid-season
La Riante	White perianth, crimson cup	Small cup	Mid-season
Golden Ducat	Yellow double	Double	Mid-season
Snowball	Double white center	"	Mid-season
Texas	Yellow and orange petals	"	Mid-season
White Lion	Yellow and white petals	"	Mid-season
Rose of May	Double white Poeticus	"	Late
Erlicheer	Miniature	"	Late
Pencrebar	Miniature	"	Late
Mol's Hobby	Split-corona	Miscellaneous	Mid-season
Papillon Blanc	Split-corona	"	Mid-season
Split	Split-corona	"	Mid-season
Lady Bee	Miniature	Small cup	Mid-season
Wee Bee	Miniature	Trumpet	Mid-season
Jonquilla simplex	Very fragrant, tiny	Jonquil	Late
Mrs. R. O. Backhouse	Pink cup	Large cup	Latish
Louise de Coligny	Pink cup	" "	Latish

The Royal Horticultural Society publishes a Classification of Daffodils, which is periodically updated. They are listed below. Descriptions of the classifications can be found in the RHS Registry at the PHS Library or in most bulb catalogs.

Division I
TRUMPET NARCISSI
of Garden Origin

Division II
LARGE-CUPPED NARCISSI
of Garden Origin

Division III
SMALL-CUPPED NARCISSI
of Garden Origin

Division IV
DOUBLE NARCISSI
of Garden Origin

Division V
TRIANDRUS NARCISSI
of Garden Origin

Division VI
CYCLAMINEUS NARCISSI
of Garden Origin

Division VII
JONQUILLA NARCISSI
of Garden Origin

Division VIII
TAZETTA NARCISSI
of Garden Origin

Division IX
POETICUS NARCISSI
of Garden Origin

Division X
SPECIES AND WILD FORMS
AND WILD HYBRIDS

Division XI
SPLIT-CORONA NARCISSI

Division XII
MISCELLANEOUS NARCISSI



A partial view of the Strandell Collection of Linnaeana at the Hunt Botanical Library.

LINNAEUS AND GARDEN LITERATURE

by George H. M. Lawrence

Dr. George H. M. Lawrence is a botanist. He was formerly director of the L. H. Bailey Hortorium at Cornell University. As director of the Hunt Botanical Library of Carnegie-Mellon University, Pittsburgh, he negotiated the acquisition of the Strandell collection of Linnaneana, the second largest of its kind in the world. Although he continues as a full-time member of the HBL staff, Dr. Lawrence makes his home in East Greenwich, Rhode Island.

To many American horticulturists the name Linnaeus is that of some European who lived in the distant past. Others know that he had something to do with the names of our plants. The more knowledgeable plantsmen know about Linnaeus and his contributions to our horticultural literature.

By any standard Linnaeus (1707-1778) was a great man, a genius, a titan in his own day, a man who truly had no peer in his day in the realm of natural science. What about the man, and the impact of his judgments?

Born in Småland, in southern Sweden, the son of a parson too poor to give him an education in the professions, the youthful Linnaeus failed to make the grade as a student of theology. He did, however, attract the



Hunt Institute photo

sympathetic support of a medical doctor in the academy at Växjö. The doctor opened his library to him and, appraising the youth's zest for biological learning, encouraged him to study medicine.

From then onward Linnaeus worked his way through his university studies, first at Lund, then at Uppsala. Linnaeus by nature was a cataloger, a person to whom everything belonged in its pigeonhole. He arranged not only plants, animals, and minerals into categories, but also classified his friends, his teachers, and townspeople. This predeliction brought him into conflict with the plant classification schemes put forward by such predecessors as John Ray in England, Bauhin in Basel, and Tournefort in Paris. Linnaeus met the conflict by devising a better system, one that would revolutionize botanical classification for a century, which he published at the age of 25. Twenty years later, in 1753, he presented the botanical world with what is now our current system of plant nomenclature.

Linnaeus went to Holland in 1735, when 28 years old, to take the examinations and receive his M.D. degree at the small University of Harderwijk (long ago disbanded, its buildings now used as a children's home). He remained in Holland, at Leyden and elsewhere, a little more than two years. During that sojourn, with encouragement and financial support from his Dutch friends, he published nine botanical works. Some of these he brought with him in manuscript from Sweden. These books were not trivia. Any one of them would have been treated as a major contribution. So great was their collective impact on the science of botany that they merit comment:

Systema naturae (1735). In this momentous volume of only seven "elephant folio" size leaves, Linnaeus presented wholly new bases for the classification of the world's plants, its animals, and its minerals. In his lifetime it passed from a first edition to a 10th edition (1758-59) that was two volumes and 1,125 pages. The 10th edition accounted for all the genera and species of animals, and all the genera of plants then known to the world. (His mineral manuscript, now in London, was not published.) Of the first edition, only about 30 copies are known today. It holds the record for receiving the highest price (in excess of $40,000) ever paid for a botanical work.

Bibliotheca botanica (dated 1736, but actually published in 1735). A small work in which he gave in greater detail than in his *Systema* his classification of plants into classes, orders, genera, and species.

Fundamenta botanica (dated 1736, but also published in 1735). A work in which he grouped all the fundamentals of botany as a science into 365 aphorisms.

Musa cliffortiana (1736). This was his first plant monograph. It was also the first botanical treatise on the banana, with a detailed study of the plant, its inflorescence, the individual flowers, and the fruit. Georg Ehret illustrated it. The monograph was based on specimens growing in the private botanical garden of Georg Clifford.

Critica botanica (1737). An elaboration of those aphorisms in his *Fundamenta botanica* that deal with Linnaeus' rules on the naming of plants.

Flora lapponica (1737). This account of the plants of Lapland was based on his exploration of that territory in 1732. It was his first application of his plant classification. In the index he used for the first time his binomial system as a means of concise reference and convenience.

Genera plantarum (1737). In this work Linnaeus named and described every genus of plant then known to him. Equally important, it was here that he first presented fully his generic reforms. He substituted in many instances new generic names for earlier ones—an application of the aphorisms in his *Critica botanica*. He rejected effectively the classification and the nomenclature of his great French predecessor, Tournefort (1656-1708). These changes were bold and revolutionary, and made both friends and enemies for him. The work was revised and expanded by Linnaeus in 1742, and again in 1754. The latter edition is consulted today by botanical taxonomists.

Hortus cliffortianus (dated 1737, published in 1738), but not on the market until 1739). This records the plants then growing in the extensive private botanical garden of Georg Clifford, at his estate Hartekamp, near Haarlem. More than a botanical volume, the work is illustrated with superb engravings from plant portraits drawn largely by the great botanical artist Georg Ehret (1708-1770). It includes also a catalogue of the books in Clifford's library, all of which were readily available to Linnaeus. This is the only one of Linnaeus' publications that can be considered a beautiful book. Its content and scope are as much horticultural as botanical.

Viridiarum cliffortianum (1737). This rare volume, almost of pocket size, was intended to be a conden-

continued

sation of ready reference to the plants reported in the larger, more rare and costly *Hortus cliffortianus.* There may be no more than two or three copies of the *Viridiarum* in America, and no individual copy is known to have been sold publicly in the past seventy-five years. Although privately printed and distributed by Clifford, one must assume its usefulness was such that copies were worn out, and that it was not considered important enough to be preserved.

In the short time he lived in Holland, the young Swede, in a land whose language he never spoke, made a mark that stamped him as the genius that he was. Seven years later, following service as a practicing physician in Stockholm, he became Professor of Botany and Medicine at the University of Uppsala. From 1741 until his death in 1778, 186 pupils took their degrees under him. Seven later made their mark as plant explorers in the Near East, Africa, Asia, and in North and South America. The extensive natural history collections supplied him by these pupils and others contributed materially to his first-hand knowledge of the plants and animals of the world.

Linnaeus is best remembered by some for his system of plant classification. But, revolutionary as it was, it was not a lasting solution, and was displaced within a century by more natural systems. His system was not deficient in itself; it was the burgeoning plant explorations that made it obsolete. Linnaeus' system worked well for the plants known at that time; the explorers, however, continued to find an ever greater variety of plants and his system could not accommodate them all.

If Linnaeus is to be remembered for any one contribution, it is for his worldwide application of a simple workable system by which to name both plants and animals. The binomial system, provided that every species has a name, in Latin form, composed of two words: the first is that of the genus to which it belongs such as *Aster, Pinus, Ginkgo;* the second is its specific epithet such as *albus, americana,* or *horizontalis.* When combined, the two words form the species name, for example, *Aster laevis.* The system is simple and effective as opposed to the cumbersome multi-word phrase name used until that time. It is governed by international rules (one set for plants, a second for animals, and a third for insects). Each set provides that a plant or animal may have one correct Latin (or scientific) name.

Garden lovers and plantsmen sometimes decry the difficulty of remembering or pronouncing the Latin name of some plant, but it is largely a matter of familiarity. Names such as *Rhododendron* and *Eucalyptus* are easy, because each is also well known as a common name. Conversely, the name of Africa's fig-marigold, *Mesembryanthemum,* may be difficult to those who seldom use it. But it is to Linnaeus that we are ever indebted for proposing, promoting, and effecting a worldwide system for the naming of plants. The concept did not originate with him, but he made it work. No better system on or below the horizon is likely to displace it.

drawing by M. Richter
Hunt Institute photo



The Twin-Flower *(Linnaea borealis)*

It is customary to identify the Latin name of a plant with the person who gave it that name. Most of our common garden plants were given their Latin names by Linnaeus. Thus, in botanical works, those generic names, and binomials assigned by him, are followed by the identifying initial L, as *Magnolia* L. for the genus, and *Magnolia acuminata* L. for the cucumber tree.

Linnaeus himself was much interested in garden plant ornamentals as well as those grown for food or medicine. In his lifetime he published annotated lists or inventories (he called them floras) of plants found growing in Sweden and Holland. Among them are:

Hortus uplandicus, on the plants found in various gardens in the Province of Upland (including those at the University of Uppsala Botanic Garden); although written in 1730, it was not published until 1788.

Adonis stenbrohultensis, which accounts for the plants in his father's garden at Stenbrohult; written in 1732, it remained unpublished until 1920.

Hortus cliffortianus (1737 [1739]) accounts for the plants in Georg Clifford's garden, and is described above.

Hortus agerumensis (1739), accounts for some 416 species of plants in a garden in Augerum, situated three miles from Karlskrona.

Hortus upsaliensis (1748) is about the plants of the university botanical garden.

Not only did Linnaeus exhort his pupils to send him plants from foreign lands, but he also investigated the best way to grow exotic plants. He introduced the tea plant from China, but found Sweden's climate too severe. He grew oranges and other citrus species in his Orangerie, as well as succulent and other plants from South Africa. Scores of introduced plants of alleged medicinal value were tested in his garden including papaver (opium), as were varieties of tobacco for smoking.

Students of plant history should know that there exists in Pittsburgh a great collection of Linnaeana, at the Hunt Botanical Library. It has more than 7,000 items, and includes everything Linnaeus is known to have published, in almost every edition and translation. Also included are his students' work, accounts about him and his family, critiques of his writings, and copies of those works most often cited by him in his writings. An annotated catalog of this collection, now nearing completion, is scheduled for publication sometime in 1974.

GARDENER'S WORD GUIDE



alatus



officinalis prostratus



variegatus

what's in a botanical name

People chafe at botanical names but they are useful because they are descriptive. Here is a list of Latin (and occasionally Greek) adjectives and their English meanings. These are often part of the botanical names of plants and can be used as a reference to unravel some of the mysteries of horticulture. The list was collected and prepared by Marianna Horner as part of a garden club project. Ms. Horner offers special thanks to John M. Fogg, Jr., for his help.

alatus — winged (branches)
albidus — whitish
albus — white
alternifolius — with alternate leaves
altissimus — very tall
angustifolius — narrow leaves
arachnoides — cobwebby
ascendens — ascending-upright leaves and branches
asper — rough
aurantiacous — orange
aureus — golden
azureus — sky blue
baccatus — berrylike, fleshy, or pulpy
bicolor — two colors
brevifolius — short leaves
caeruleus — dark blue
callianthus — beautiful flowers
calocarpus — beautiful fruit
campanulatus — bell flowered
candicans — white, clear and shiny
capitatus — rounded like a head
cardinalis — red
carneus — flesh colored
cernus — drooping, nodding
citrinus — lemon yellow
coccineus — scarlet
columnaris — upright
compactus — dense
concolor — uniform color of leaf surfaces
crenatus — scalloped
cupressus — flattened
cuspidatus — sharp tip on leaf
cyaneus — blue
dentatus — toothed
discolor — two colors as of different leaf surfaces (top and underneath)
divaricatus — spreading
fastigiatus — erect, close branches
floribundus — free flowering
floridus — full flowering
frutescens — becoming shrubby
fruticans — shrubby
fruticosus — shrubby
glaber — smooth
glaucus — bluish-green bloom on leaves or fruit
gracilis — graceful, slender
griseus — gray
guttatus — speckled
hispidus — bristly, rough, hairy
horizontalis — flat growing
humilis — low growing, dwarf
incanus — hoary white, grey
inflorescence — flower cluster
lacteus — milky white
latifolious — with broad leaves
lineatus — striped
lucidus — bright, shiny
luteus — yellow
maculatus — speckled
microphyllus — with small leaves
mollis — with soft hairy pubescence
multicolor — multicolored
nanus — dwarf
niger — black
nitidus — shining
niveus — snowy
officinalis — applied to plants of real or supposed medicinal value
palustris — of swamps
paniculatus — flowers in compound racemes
patens — spreading
pendulus — weeping
pictus — painted
plenus — full
praecox — early flowering
procumbens — flat or trailing
prostratus — prostrate, flat
pubescens — hairy, downy
pumilus — dwarf
purpureus — purple
radicans — rooting
repandens — curved, spreading
repens — creeping
rhytidophyllus — with wrinkled leaves
roseus — rosy
rubrum — red
rupestris — rock loving
sanguineus — blood red
scandens — climbing
semperflorens — everblooming
sempervirens — evergreen
serratus — saw-toothed
sessilis — without stalk or petiole
stoloniferus — creeping roots
striatus — striped
strictus — upright
sylvaticus — of the forests
tomentosa — densely wooly
tortuosus — twisted
undulatus — wavy
variegatus — variegated
versicolor — variously colored or changing color
verticillatus — leaves or flowers encircling the stem
verruculosus — warty
villosus — soft, hairy
virens — green
viridis — green
vulgaris — common
xanthinus — yellow



Joy Mackinney is a Master Chrysanthemum Judge and an accredited Daffodil Judge. She is a seven-time winner of the Flower & Garden Show Horticultural Sweepstakes; director of the National Chrysanthemum Society; and a vice-president of the American Daffodil Society.

chrysanthemum — red rover

To those who think of chrysanthemums as huge, globular bronze or gold "football mums," Red Rover may come as something of a surprise. This striking flower is classified by the National Chrysanthemum Society as a semi-double, having approximately five rows of petals. The petals, which are broad and slightly recurving, are a rich red, sometimes striped with gold. The center disk is a bright, clear yellow. The bloom, carried on a strong, straight stem, often measures 6 inches in diameter. Unlike many chrysanthemums, Red Rover has handsome foliage, dark green and deeply serrated.

For a number of years we were unable to buy cuttings of Red Rover. Like so many hobbyists we are at the mercy of the commercial growers, who for one reason or another discontinue propagating certain cultivars, sometimes for years, sometimes permanently.

At one of the local chrysanthemum shows I mentioned to Dr. J. J. Willaman the difficulty I was having locating a source for Red Rover. Dr. Willaman said he thought he had an extra cutting and would be delighted to give it to me. What a cutting it turned out to be; strong, vigorous and the flower, when it bloomed, was a brilliant color, not streaked as some Red Rover stock often is.

That was many years ago. Each spring we take cuttings from plants wintered over in the cold frame and each fall we exhibit and win ribbons with the descendants from Dr. Willaman's Red Rover.

Joy Mackinney



Hardy Beauty *(Camellia japonica)*

M. M. Brubaker insists that the honor that most pleases him was having the junk heap at Dupont named "Brubaker's Bonanza." From the pile, Brubaker, who was assistant director of central research before he retired, rescued obsolete equipment to technologically update his greenhouses in Chadds Ford.

camellia japonica

I was challenged to grow *Camellia japonica* in Pennsylvania when I encountered what might be called the camellia paradox in the American Camellia Yearbook for 1947. Here southern growers told sad stories about how unkind the winter had been to their camellias. In another article Dr. Zimmerman of the Boyce Thompson Institute for Plant Research reported that his *C. japonica* plants withstood the winters at Yonkers, New York, in fine shape and bloomed well each year except in 1934 when the flowers had been injured by 20° below zero weather.

The explanation for the paradox is that presumably in New York the plants went into a dormancy that equipped them to withstand hard winters, while in the south an alternation of cold and warm weather did not give the plants a chance to become really dormant. To convince people that *C. japonica* could thrive in northern locations, Dr. Zimmerman planted them around his son's home in a suburb north of Wilmington, Delaware.

Nurseries in the Delaware Valley area generally recommended *C. sasanqua,* and insisted that *C. japonica* would not stand our winters. I have planted a number of *C. sasanqua,* and have yet to succeed with them, although the plant does well in some protected urban areas. On the other hand, I have ten mature *C. japonica* trees producing good flowers about as consistently as the early magnolias. Half of these are growing in nearly full sun.

I have selected *Camellia japonica* to extol because it is a beautiful, broadleafed evergreen tree at this season, and at its best from the standpoint of a foliage plant. It will provide a fine aura in flower arrangements throughout the winter. Furthermore, now is the time to take cuttings for rooting those varieties that thrive and bloom well in this area.

M. M. Brubaker

nyssa sylvatica

In my opinion the *Nyssa sylvatica* is a tree with qualities admirably suited to our part of the world. Surely some of these trees suggested the poetic name the botanical classifiers gave it. *Nyssa,* the name of the water nymph, and *sylvatica,* woods.

It is a native American tree, called the sour gum or the tupelo. The latter comes from *itoopilwa,* a Creek Indian word meaning tree of the swamp. While the range of that tribe covered only our southeastern states, the tupelo grows from Maine and Michigan to Florida and Texas.

In the "Low Country" of South Carolina, the *Nyssa,* which is known there as the black gum, is not highly regarded because it has no value as lumber. But moving northward, it is appreciated for its strong and regular growth and its bright scarlet color in early autumn. In our part of Delaware County, the sour gum grows best not far from a stream, but not actually in a marsh.

The sour gum, however, has a serious drawback. It is hard to transplant, but with root pruning and attentive watering it can be done. Once established the sour gum is moderately fast growing, seems to be free from disease and requires little, if any, pruning. Some larger specimens may be seen at Tinker Hill Farm, Phoenixville; Heyburn Bridge Roads, Birmingham; and 401 Mulberry Lane, Bryn Mawr.

A. G. Rosengarten, Jr.



photo — courtesy U.S. Forest Service

Adolph Rosengarten, Jr., has lived at Chanticleer in Radnor Township for 60 years. The garden showplace has been visited on tours by PHS and Horticultural Society of New York members. Rosengarten considers the trees and shrubs the most significant part of the collection. Rosengarten is a member of the PHS Council.

parnassia

September culminates in mass colorings of composites such as asters and chrysanthemums, in the mints, with bee balm and other bergamots, and in the lobelias, including cardinal flowers and great blue lobelias.

But September also brings the delicate, quiet beauty of grass of Parnassus. To discover now the solitary, bright chalice of any Parnassia flower rising on its slender stalk above the rich rosette of its basal leaves is to live with spring again in fall. Grass of Parnassus has something of the simple, lithe appearance of a windflower. When we examine closely the *Parnassia,* we notice the etched green interior venation of the five white petals, the flowering green and white spindle of the style, the five white stamens with their rich brown anthers, and the crowning glory, the coronet of five to 15 yellow or green staminodes. *Parnassia* possesses truly classical elegance. The plant grows along streams or in open wet meadows, keeping its feet damp, often in the same place and blooming at the same time as fringed gentian. To find the two together, the clean white and the clear blue, is doubly breathtaking.

Species of *Parnassia* are widespread in the northern hemisphere. *P. palustris* and *P. glauca* grow wild from New England to Virginia; *P. grandifolia* and *P. asarifolia* (my favorite) flourish along the southern Appalachians, from Virginia to Alabama.

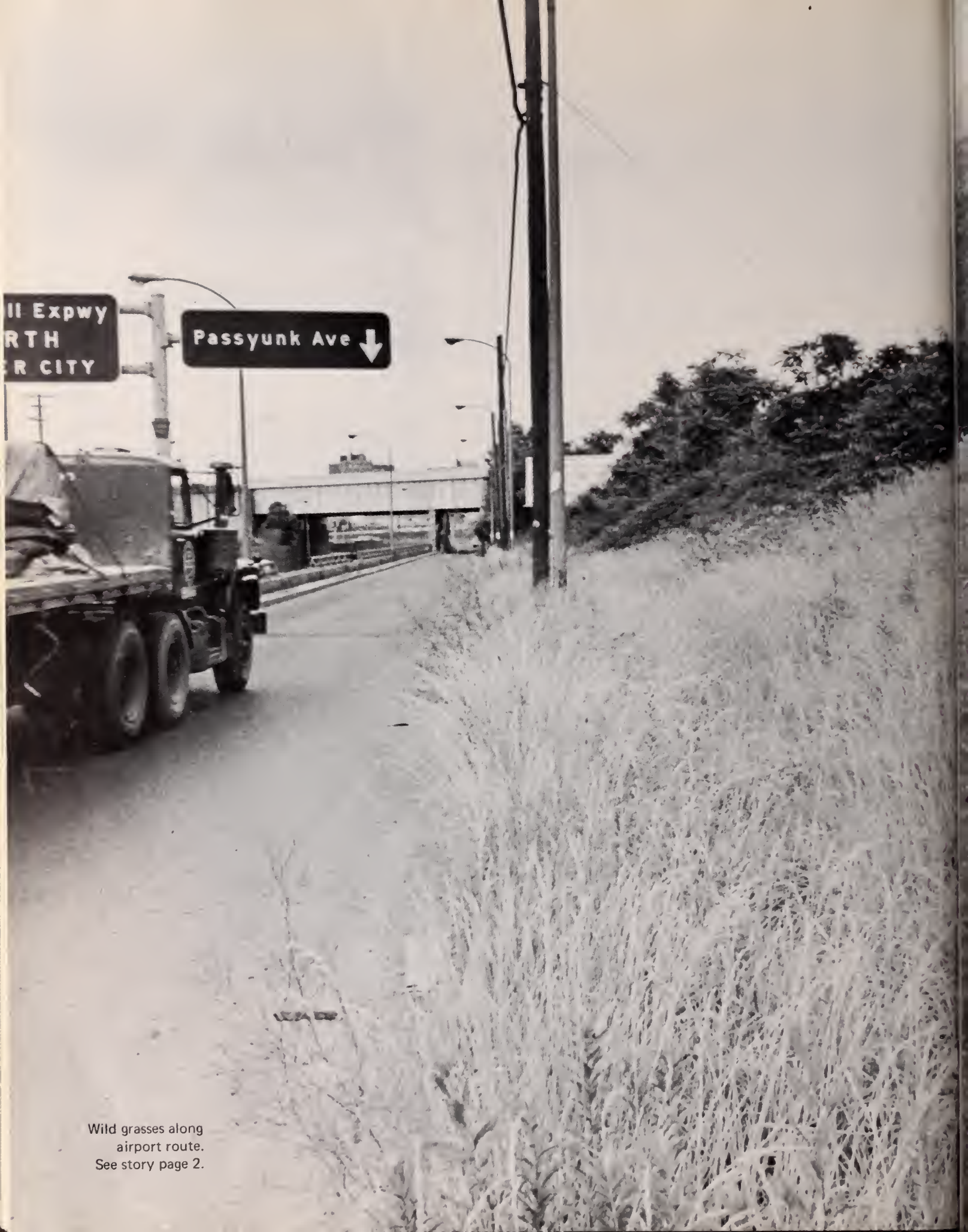
Grass of Parnassus is easy to grow in any damp (but not stagnant) spot, from partial to full sun. The southern species are fully hardy around Philadelphia. *P. asarifolia* is acid-loving; most of the others are calciphiles. If you can't find plants at nurseries, gather your own seeds from the wild (or have friends do it for you); they are prolific seed-producers, and develop well from seed. (All mine were raised from seed.) Both L. H. Bailey and Edgar Wherry recommend these native plants for horticultural pleasure.

Ralph M. Sargent



Parnassia asarifolia

Ralph M. Sargent was president of the Philadelphia Botanical Club from 1967-72. He is Trustee of the Highlands North Carolina Biological State of Southern Universities, and a member of the Board of the Henry Foundation of Botanical Research. He has a small garden here and six acres of native plants in North Carolina.



Wild grasses along airport route. See story page 2.



THE

green scene

HORTICULTURE IN THE DELAWARE VALLEY

NOVEMBER • DECEMBER • 1973

needed: 10,000 trees



2



8



12



14



20

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 2 Nov., Dec., 1973

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*Director*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Léonie Bell
M. M. Brubaker
Barbara H. Emerson
Herbert W. Goodall, Jr.
John S. Kistler
Bebe Miles
Ralph M. Sargent
Phyllis G. Williams

DESIGNER
Charles Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 2, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1973

in this issue

1 Guest Editorial *by Raymond Terry Schnadelbach*

2 Needed: 10,000 Trees *by Teddy Welgoss*

7 Digging for Information *by Ed Lindemann*

8 Cut and Dried *by Mrs. H.B. King*

12 A Christmas Crèche Made of Dried Plant Material *by Henrietta G. Truitt*

14 Some Light on the Garden in Your House *by Libby Stephenson*

18 Books and the Green World: Herbs at Christmas *by Julie Morris*

20 Salt . . . Ice-free Walks and Dead Plants *by Roland Daniels*

23 Growing Interests

25 Classified Advertising

Front Cover: Belmont Plateau in Fairmount Park

Front and back cover photo by Edmund B. Gilchrist, Jr.



Fairmount Park: Philadelphia's largest asset

Many Philadelphians and suburbanites use Fairmount Park daily, if only at 9 o'clock and 5 o'clock. But the scenic route commuters often forget the real purpose and function of the Park. From a car at 45 mph it all fades to a green blur.

The scope of Fairmount Park is now very broad, broader even than some of its most sanguine Victorian founders could have wished. The Park is not just "Public Lands" but a green container filled with goodies: playgrounds, recreation complexes, pleasure gardens, sculpture, historical sites, biking, sport fields, allotment gardens, picnic areas, and boating. It is also the home of the Robin Hood Dell, the country's first zoo, Boat House Row, the Art Museum, and the country's last birthday party. It is used daily by Philadelphians of all social and income levels as individuals, couples, families, clubs and societies. A car window count by this author on a weekday last July indicated over 30,000 visible Park users, and no telling how many additional were quietly relaxing in some quiet glen.

Fairmount Park is vital to the city's natural health. The Park forms a 3526-acre green wedge at the heart of the city; by topography it is the oxygen and fresh air corridor critical to amelioration of the city's air pollution problem.

In short, Fairmount Park, as the oldest and largest city park in the nation, is Philadelphia's largest asset.

But the Park is not without problems. Its slopes are torn by erosion for need of stairs and bike ramps; its streams are polluted by people for want of public toilets, its sports fields and courts and public walks lay abandoned at night for need of lighting, its grass fields are torn up by cars for lack of proper parking or, better yet, public transport. But most critical, people including children, bikers, riders and their horses, the blind and Sunday strollers have been killed or injured by high-speed traffic for lack of safe grade separated crossings, pedestrian underpasses and bridges.

The Park has traditionally been given low city budget priority. It has always come after schools, housing and commerce, and been considered a luxury urban item. Furthermore, it is considered a gossamer land use destined to disappear with each proposal for expressway expansion, technical high school and police station.

Fairmount Park desperately needs additional city funding, new facilities, and renovations to update its nineteenth century base. Additional funding is needed for increased maintenance staff and equipment to keep its trees sound and its grounds safe and clean.

Fairmount Park also needs private support. It needs advocate groups from its neighboring communities to support improvements and defeat encroachments. It needs city-wide associations such as the Pennsylvania Horticultural Society to contribute to and invest in the Park's physical and cultural stock.

What Fairmount Park needs most today is friends; friends in both government and the citizenry. These friends of Fairmount Park should campaign its cause, correct its problems and watchguard its future, because Fairmount Park is truly Philadelphia's largest asset.

Raymond Terry Schnadelbach

R. T. Schnadelbach is a partner in the Schnadelbach Braun Partnership, a firm of landscape architects, architects, urban designers and ecologists. His firm submitted a plan, now under consideration, to the Bicentennial Planning Group for the appropriate use of Fairmount Park during the Bicentennial.

photo by Edmund B. Gilchrist, Jr.

guest editorial



GOING GOING

needed: 10,000 trees

PHS, with your help, will buy 10,000 trees to celebrate the Nation's Bicentennial.



photos by Edmund B. Gilchrist, Jr.



GONE

by Teddy Welgoss

Teddy Welgoss is the Bicentennial projects director for PHS. She will direct the 10,000 Trees program as well as work on the Greening of Philadelphia and the Bicentennial film project.

City life can be fraught with stress. We all devise our own ways of dealing with it, but I'm sure many people practice my method.

I climb into a car with a friend and drive out to Valley Green in the Wissahickon area of Fairmount Park. The Wissahickon gorge abounds in hemlocks, beeches and tulip poplars. It is one of the finest of the park's wooded areas. Once in the park, we pick a tree and sit beneath it in absolute silence. After awhile we are again ready to face the world outside of the park.

Such activity points to one of the contradictions of city people: we thrive on city life but for many of us our favorite city spots are the parks and open spaces within them. The open spaces provide a convenient escape as well as opportunities for a variety of activities: tennis, swimming, kite flying, sailing, biking, hiking, horseback riding, theatre or open air concerts.

Our city's park system encompasses 7,832 acres of public land scattered throughout the greater Philadelphia area. Thirty-four parks fall under the jurisdiction of the Fairmount Park Commission. Fairmount Park itself consists of 4,078 contiguous acres making it the largest in our nation.

But are Philadelphia's city parks sufficiently valued by the millions of people who annually use them? Do we concern ourselves with their preservation and care? Many of us are not even aware that certain areas of our parks are in trouble and need the help and support of citizens such as ourselves. For example, the wooded areas should be cause for our concern; we are losing trees faster than we are replanting them.

Entire groves of trees in the park are dying because they lack the insect sprays needed to protect them. DDT-based sprays have been banned for city use, and new, safer sprays cannot be ordered until maintenance funds for next year are appropriated. Chances are that these groves will die and have to be removed before the new sprays arrive.

The Park has lost 16 members of its

continued

tree care division in the last three years because funds were cut. The 27 remaining in the department are responsible not only for the care of all of the Park's trees but 300,000 city-maintained street trees as well.

Our neglect may be benign, but it is shortsighted. Trees are undoubtedly one of the most important elements comprising any park. Most authorities agree that we need trees in our towns and cities for aesthetic, physical and

Trees provide shade, relieve eyestrain, absorb sound, give off moisture, purify the air and transform the landscape.

psychological purposes. Trees provide shade, relieve eyestrain, absorb sound, give off moisture, purify the air and transform the landscape. Imagining a park without trees is difficult.

Tree enthusiasts will find a veritable haven within Fairmount Park. The Park is still considered a representative example of eastern American woodlands. The trees we see there now are second and third growth of the same native species that existed during William Penn's time. Some are direct ancestors of the Park's original trees but most are not. Conditions in the Park do not lend much to self-propagation, but the trees planted there have remained fairly true to the original forest because the species chosen seemed to adapt best. Fairmount's native trees include seven or eight species of oaks, five kinds of hickories and varieties of maples, ashes, lindens, willows, birches and others. A magnificent oak grove outlines the Park's Belmont Plateau area and many fine old trees continue to survive there. West River Drive is notable for a variety of reasons, and one of them is the beautiful sycamores that have delighted commuters, bicyclists and picnickers for years. Other large parks in Philadelphia contain almost as varied a native tree population as Fairmount. Most prominent in Pennypack and Cobbs Creek parks is red oaks, maples, tulip poplars and beeches. Approximately 200 exotic trees imported from abroad have been planted at one time or another in Fairmount Park. Prime specimens of these exotic trees can still be found in the area of the park where the old Horticultural Hall once stood. There they are interspersed with native elms. However, only about a third of the original planting has survived. The survivors include the ginkgo, ailanthus and various cherries. Adverse climatic conditions and the trees' inability to adjust to the city around it can be blamed.

Unfortunately, a tree's years seem to be numbered as soon as it is placed within an urban environment. The conditions of nature that favor and promote tree growth simply do not exist in the city. Leaking gas, road oils, auto fumes, smoke and dust coat the leaves' pores choking them to an early death. Disease spreads quickly as many trees of the same species are planted in close proximity. Underground cables and gas mains jolt trees' water tables so drastically they are never able to readjust. These adversities combined with the lack of even minimal care the city is able to give our trees cause us to wonder that they survive as long as they do.

Many trees are not surviving, however. Of Fairmount Park's approximately 3,000,000 trees, 500 die each year. But because these trees and the use we make of them cannot be measured in dollars, there have been few strong interest groups that have concerned themselves with the welfare of the urban forest.

There are encouraging hints that this attitude may be changing.

"Urban Reforestation" is a new concept whose importance we are just beginning to recognize. City dwellers are learning that the forests they enjoy so much within their cities must be

Many of us are not even aware that certain areas of our parks are in trouble and need the help and support of citizens such as ourselves.

taken care of if they are to continue to give pleasure to succeeding generations. Just as it is important to replant valuable timberlands to insure their resulting products, so we must replant our cities' timberlands for good and logical reasons—trees are pleasant, natural objects that most people like, like sunshine, rain, wind and water. They are a normal part of our environment and one of the few bits of nature that we can enjoy in cities.

Many cities are taking action. New York's city government has recently allocated $7.5 million to its department of parks, recreation and cultural affairs for tree planting. Trees will be placed along city streets and parkways in a massive effort to improve New York's environmental conditions.

Boston has recently passed strong laws to protect existing trees in that city. Boston has also begun a "Plantree" program to double its tree inventory in three to five years and is rehabilitating its parks. They have mobilized public and private agencies of all kinds to plant extensively on their grounds.

It's time for Philadelphia to show similar concern. The Pennsylvania Horticultural Society hopes to serve as the catalyst through its "10,000 Trees" program. It will provide the means by which we can all participate in urban reforestation.

We can't begin too soon here in Philadelphia. We all know the difficulties that trees encounter in urban settings. We know the number of virgin forest trees in Fairmount Park is diminishing. Fairmount Park's last major tree planting took place almost 97 years ago to honor the Centennial celebration there. One hundred years is about the maximum time that any tree can be expected to survive in an urban environment. So, as we approach our nation's 200th birthday, we simultaneously approach a crucial point that may well determine the fate of our city parks.

The time to replant is not when these fine old trees finally succumb, but now. The Park Commission has tried to keep abreast of its tree problems but, as the guest editorial on page one points out, the city fathers regard the park as a luxury urban item. When operational budgets must be shaved, the Park's expenses are invariably the first to be cut back.

The fate of our city's parks is up to us, the people who use them. I don't regard the park as a luxury urban item nor do many other Philadelphians. For us, the park's existence is as essential to city life as an effective police force and a healthy school system. If our taxes are being completely eaten up for other city needs, then it is up to us to act to improve the Park.

"10,000 Trees," once achieved, will do just that. I can't think of a more

continued





Dying elm along the Drive

fitting birthday present to the city than a gift of additional trees that will be of long lasting benefit to our environment.

Our "10,000 Trees" program incorporates both educational and fund-raising activities. We will appeal to all Philadelphians. The city parks are people's parks and the people will be given the opportunity to assist in their survival. The rewards will be large. When our program's objectives have been met, 10,000 new trees will be standing in our city's parks as a testament to the concern of Philadelphia's citizens.

Cooperating groups have worked out a plan whereby the Park will be divided into areas so that commemorative groves can be developed by interested cities, states, nations and business, industry and community groups. Each tree's donor will be recorded permanently in Memorial Hall in Fairmount Park and a living memorial will be established. Future Philadelphians will see that at one time people in this city felt an urgency to preserve one of its greatest assets—the parks they will enjoy years from now.

●

Join us in making the 10,000 trees a reality. Help by sending checks to us at PHS. Also, if you are interested in becoming involved in the project, call PHS, WA 2-4801.



digging for information

HORTICULTURAL CORRESPONDENCE

by Ed Lindemann,
horticulturist

rosa multiflora

Q. I am sending you flowers that have been growing over my rose bush, which for the past three years has produced beautiful roses. I was advised by my florist to contact you; the proprietor said he has never seen anything like it.

M.Z., Philadelphia

A. It appears to us from the specimen you sent that your bush has reverted back to its wild or natural state. That often happens if the rose bush has been pruned too severely. These roses are grafted. If pruned severely the wild root stock, usually *Rosa multiflora,* will send out shoots that bear very small and insignificant flowers; it appears to be the case with your plant.

Examine the plant carefully and see if you can locate the graft, which should be near the ground level. Remove any shoots that are growing below the graft and allow only those above the graft to develop.

aphids

Q. I have enclosed some leaves from my peach tree. The reddish spots are on most of the tree's leaves. The leaves are droopy and some of them are yellow. The tree is in an open area with plenty of sun.

K.W., Philadelphia

A. The leaves appear to have been attacked by either green or black peach aphid. To control either of these pests spray with lindane or malathion. Follow the directions on the bottle. Repeat the spraying a week later.

jade tree

Q. I received a jade plant as a gift. The leaves were falling off and I was advised to water the plant once a week and wait to see if the plant was in shock in its new environment.

The leaves did stop falling for about two weeks and then about a week ago some of the leaves started to turn yellow and fall off. Today I found five leaves that had fallen off overnight.

I have enclosed some of the leaves that fell last evening.

P.E., Philadelphia

A. We've examined your jade plant leaf specimen. The appearance of the leaves suggests that the plant is being overwatered. Jade plants are succulents and should be allowed to dry out completely before they are watered. If the plant is growing in a clay container with good drainage, it usually is necessary to water about once a week.

If your plant does not improve, I suggest you come to our next free plant clinic.

Editor's note: See PHS NEWS for dates of free clinics throughout the year.

preserving grape leaves

Q. Can you please tell me how to preserve grape leaves? I enjoy using them in cooking and would like to be able to keep them for use throughout the year.

S.H., Essington, Pa.

A. Here is the only recipe for preserving grape leaves that I was able to find in our library.

For cooking purposes grape leaves should be gathered in June when they are full size but still tender. They can be preserved with salt for use at other times of the year. Place each grape leaf flat in a covered glass or earthenware dish and sprinkle liberally with salt. Continue until the jar is full. Cover and keep in a cool place. Before using the preserved leaves, wash them several times with fresh water; use as fresh leaves.

cassia fasciculata

Q. Enclosed are some leaves and flower heads from a mimosa type tree. Instead of flowering like the regular mi-mara trees at the shore with a pink feathery type flower, mine has a yellow flower similar to a pansy. The flower and leaves of the tree close up at night.

M.M., Philadelphia

A. The plant that you are trying to identify is *Cassia fasciculata,* commonly called partridge pea. This common roadside wildflower stands up to three feet in height. The leaves are compound, in segments of 10 to 15 pairs. The plant blooms from July to September and does especially well in dry sandy soil.

downy mildew

Q. Please identify the horrible disease that has overtaken my begonias and marigolds. It is spreading to other plants. How can I stop it?

C.E., Philadelphia

A. The marigold specimen that you sent shows that the plant is being attacked by downy mildew. I suggest that you spray them with a bordeaux mixture. It will help prevent the spread of the fungus.

Downy mildew is caused by poor air circulation and excessively humid and warm nights.

more on aphids

Q. The leaves on my Norway maple tree are dropping off in abundance, yet the tree appears to be healthy. Can you suggest what the problem might be?

Mrs. G.W., Philadelphia

A. Your Norway maple appears to be infected with the Norway maple aphid. Norway maples are subject to infestation by these hairy aphids; they are green in color with brown markings. As the aphids attack, the leaves become wrinkled, discolored and reduced in size. Defoliation often follows. The trees should be sprayed in the early summer with malathion and it is important to cover the undersides of the leaves. From the size of the leaf you sent, it appears that you have a large tree. I suggest, therefore, that you contact a competent tree person to handle the job.



Mrs. King's Blue Ribbon
winner at 1969 Philadelphia
Flower and Garden Show

cut and dried

a no-nonsense approach to dried flower arrangements

by Mrs. H. B. King

If you happen to be standing around the niche section when the judges are deliberating at the Philadelphia Flower and Garden Show, many passers-by will tug at your sleeve. They will point to Mrs. King's arrangement and say disbelievingly, "That one's not dried, is it?" You will say, "Yes it is." They strain to get closer. "It sure looks real," they mutter and move on. Mrs. King's work has been featured in a book and there's a rumor that a local Sunday supplement will feature her 1973 prizewinning bouquet on the cover in color for the 1974 Show. They scooped THE GREEN SCENE on that photo, but we've persuaded Mrs. King to share her methods with us. We hope you'll experiment and join her in future niche competitions at the Philadelphia Flower and Garden Show. She is chairwoman of the Competitive Classes Committee for the 1974-75 Shows.

Last February our wonderful local florist was featuring some very large, very yellow daffodils; red, red roses; yellow and white freesias; white ranunculas; and beautiful delphinium, all flown in from Holland. They were irresistible; I bought some. A month later they were still irresistible. And I was fortunate enough to win a blue ribbon for the bouquet at the Philadelphia Flower and Garden Show. Of course, it was in the **dried flower arrangements** section of the Show. In May, the same arrangement won a silver bowl for the outstanding blue ribbon winner in the Chestnut Hill Flower Show.

I first started drying flowers several years ago when I came upon a can of silica gel (commercially called Flower Dri) in a florist shop. Silica gel is a desiccant, a substance that has a great affinity for water. I took some home and began to play with it. Through trial and error I have learned to dry almost all varieties of flowers—delphinium, anemone, euphorbia, freesia, ranunculus, tulips, lilac, geraniums, daisies, roses, daffodils, passion flowers, clematis, chrysanthemums, zinnias, azaleas, rhododendron, lily-of-the-valley, lilies, gladiolus, salvia, hydrangea. I have not been able to dry successfully gardenias, petunias or the foliage of begonia and geranium.

One thing to bear in mind before starting is that flowers shrink when dried. So you will need more dried flowers than fresh to make a bouquet of equivalent size. Many flowers darken when dried, so you will have to experiment with color; e.g., a pink rose may turn mauve, when dried. You will often have to select a flower several shades lighter than the color you want in the final arrangement. You can only develop good colors through practice.

All flowers to be dried should be absolutely fresh whether picked from your garden or purchased at a florist's shop. It is a good idea to dry flowers in several stages; get some buds, some partially open, some fully open and some with foliage.

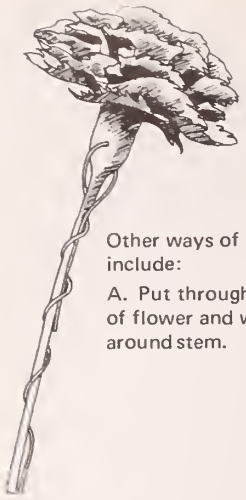
To do the job, you will need florist wire in several sizes, floral tape, floral clay, a wire cutter, tweezers, a sheet of styrofoam, scissors, boxes with tight lids (I use 14" x 11" x 4" plastic sweater boxes) and a small soft paint brush. For the drying, I use silica gel. Silica gel's capacity to rapidly absorb moisture from flowers is analogous to that of quick freezing food: the rapidity

continued



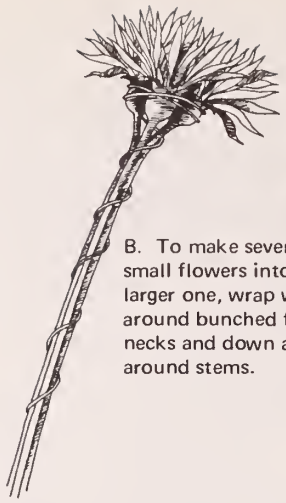
Insert florist wire up through the stem into the head of the flower. The stem can then be bent while the flower is still fresh.

photo by Edmund B. Gilchrist, Jr. • drawings by Julie Baxendell

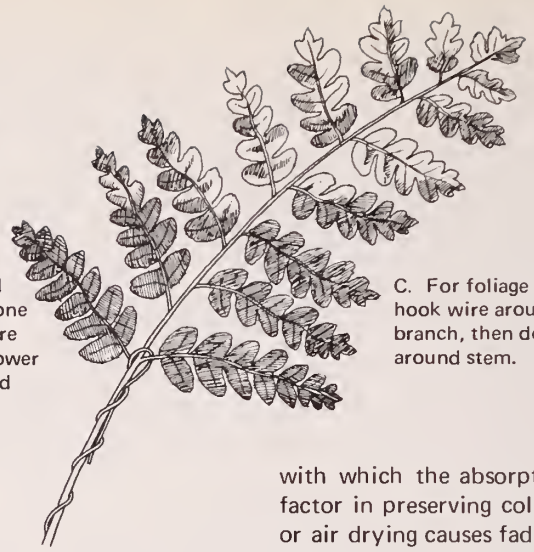


Other ways of wiring include:

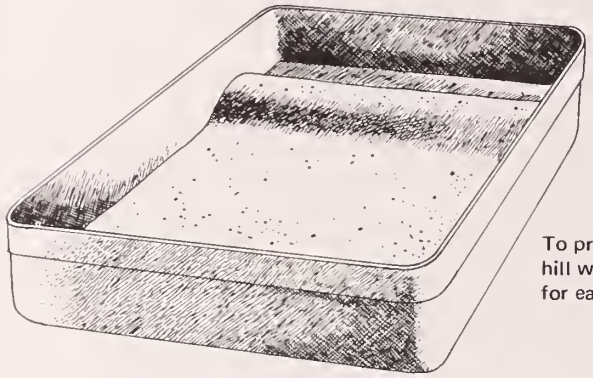
A. Put through neck of flower and wrap around stem.



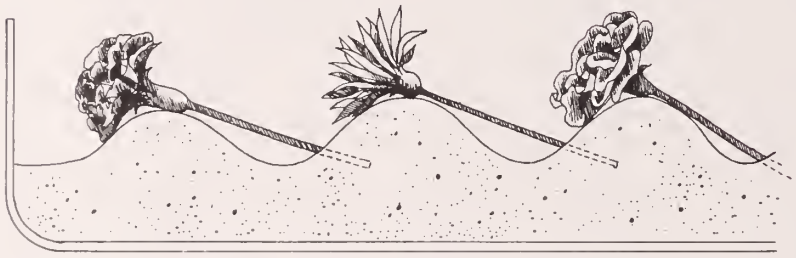
B. To make several small flowers into one larger one, wrap wire around bunched flower necks and down and around stems.



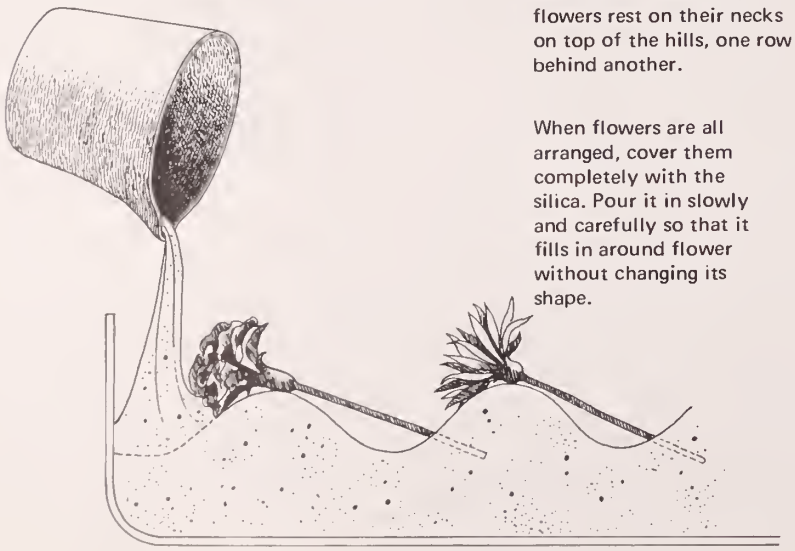
C. For foliage or ferns, hook wire around a branch, then down and around stem.



To prepare the box, form a hill with the silica powder for each row of flowers.



Seen from a side view, the flowers rest on their necks on top of the hills, one row behind another.



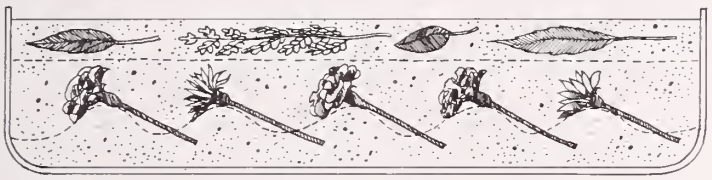
When flowers are all arranged, cover them completely with the silica. Pour it in slowly and carefully so that it fills in around flower without changing its shape.

with which the absorption occurs is a factor in preserving color. Slow drying or air drying causes fading. The thirsty white powder has small blue crystals in it. A two-pound can from the florist costs about $6.00, but it is reusable indefinitely. As the powder absorbs moisture, the blue crystals turn pink indicating that it can absorb no more moisture. If you put the silica gel in the oven at about 350° for an hour or so the crystals will turn blue again and can be reused. **Don't use it unless the crystals are blue.**

Before drying, flowers must be wired because they are very fragile once dried. Keep as much of the stem as possible. I force the florist wire up the center of the stem, just into the flower head. Once wired, the stem can be bent into a natural curve or kept straight and will dry that way. After the flowers and foliage are wired, lightly cover the bottom of the box with silica. When I've done that, I then make a small hill on which to place the calyx (or neck of the flower) facing upward as it grows. I do this for each flower head until no more flowers can be fit in. The individual hill is created so that the flowers will not be flattened by the weight of the powder.

When the hills are complete, I carefully pour more powder around the flowers, letting it fill all the spaces between. It is important to completely bury the flowers, but also to be sure they keep their shape. Put the lid on the box. If the lid is not tight, tape (masking or scotch tape) around it and put it in some out of the way dry place. Small fragile flowers will take two to three days. Most other flowers will take five to seven days. When you think they may be thoroughly dried, carefully pour off a little of the powder and gently touch the petals of the first exposed flower. If it feels even slightly limp it is not dried; rebury it for a day or two. If it feels crisp it is done and

If the box is deep enough, flat foliage like leaves and ferns can be put in another layer on top of the flowers.



all powder should be poured off. The excess powder can be tapped off. You may need to remove stubborn powder with a paint brush.

It is best to put the same type of plant material in the same box, foliage either on the bottom or the top. If both large and small flowers are put in the same box, the smaller, more quickly dried ones can be put on top after the larger ones have been buried. If the box is deep enough several layers can be put in as long as each is completely buried. The top layer can be removed in a few days and the rest left to dry.

Now that your flowers are all dried, the real fun starts. They are already wired and will, unlike fresh flowers, stay where you put them. After all powder is off, you may want to spray lightly with waterless hair spray or clear plastic. Select your container; imbed a pin point holder in floral clay in the bottom of the container; firmly anchor a piece of styrofoam cut to fill the vase. The wired flowers can be poked into the styrofoam. If you find you need more height, just add more wire. If you need less, just shorten the wired stem. Start the arrangement at the back and work from back to front so you don't knock the fragile flowers. As the arrangement begins to fill out, it helps to put the wired stems into the styrofoam with the tweezers so there is less danger of bumping the flowers already in the bouquet. Foliage can be used to hide wires. If some petal should fall off your most beautiful bloom don't be discouraged; you can easily glue it back on with Elmer's glue or Sobo glue and no one will be the wiser.

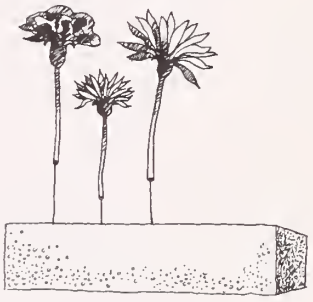
Don't be discouraged if some of your first efforts are less than perfect. Some things will dry nicely and some will not. With silica gel to play with we no longer have to think of dried arrangements in terms of pods, wheat, or dried grasses. Drying flowers is great fun—I hope you will try it.

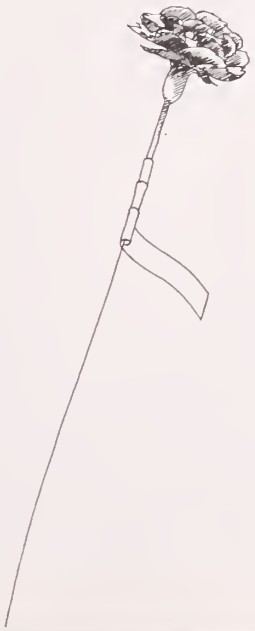


When drying is completed, pour off the silica powder very gently.



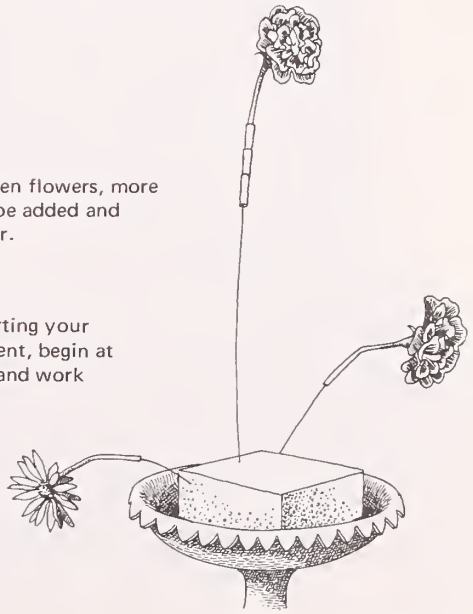
As soon as each flower is uncovered, pick it up carefully by its stem and stick it into the styrofoam for temporary safekeeping.





To lengthen flowers, more wire can be added and taped over.

When starting your arrangement, begin at the back and work forward.





A Christmas Crèche Made of Dried Plant Material

by Henrietta G. Truitt

Mrs. Charles Truitt is a member of Four Counties Garden Club. She has won many blue ribbons for her Flower & Garden Show entries, which have included topiaries, forced bulbs and specimen plants. A few years ago, she won a "Best of Show" for her orange tree entry.

In creating anything, the artist can begin with something in his or her mind's eye—a source of inspiration—but as the work evolves things sometimes fall into place quite by chance, like a sudden ray of light coming from behind a cloud. It is an exciting experience. So it was with the crèche which I made several years ago. I began by collecting leaves, twigs, flowers and seeds of many varieties and shapes. Almost the first thing to catch my eye was a marvelously curved, dried oak leaf. In turning it around it seemed to be a figure pointing and, suddenly, I pictured Joseph standing beside Mary behind a cradle. It seemed entirely fitting that Joseph should be represented by an oak leaf. I began hunting for an appropriate leaf for Mary. And so it went, things just seemed to fall into place. There is such a wealth of plant material to be found and creating with bits and pieces can sometimes produce startling results. The most difficult problem is to use restraint; that original naturally curved oak leaf was complete; nothing needed to be added but the head.

The cradle is a milkweed pod. The Baby's head, a tiny acorn and his body swathed with blades of grass. A prickly seed ball of the sweet gum is the head of a shepherd. His sheep are cotton mixed with pearly everlasting glued to pipe cleaner "bones." Mary's hair is silk from the milkweed pod. The ivy leaves on which the cradle rests were pressed then glued in a star-shaped pattern and sprayed with gold paint. Together with the overhead star that is fastened at the top of the tree (not shown) and consists of a three dimensional design made with various seed pods, it is the only artificial coloring that has been used. The three kings or wise men are many combinations of leaves and seed pods. One of them is made from a very small ear of corn turned upside down. The husks form his flowing robes. An acorn cup filled with berries is his gold or myrrh. The dogwood tree—just a leafless branch—stands behind the whole composition and gives a feeling of height.

As to the "mechanics," the figures, underneath their raiment, are mostly clothes pins with pipe cleaner limbs, if needed, used as a base around which the plant material is glued. Dried leaves may be moistened making them more pliable. Contact cement seems to be the easiest to use and tweezers are essential. The figures are arranged on moss which I collect in the woods before Christmas and keep green by spraying with water. The figures are packed away in a shoe box between Christmases. They have kept remarkably well for several years with only a few minor repairs needed.

●



photos by Edmund B. Gilchrist, Jr.

Joseph is of oak leaves for strength. Mary, sweet bay magnolia for beauty. The wise men's gifts and their crowns are all of seeds; the fruits of the earth. The dogwood tree represents the Crucifixion because of the legend that the Cross was of dogwood. The sprig of rosemary for remembrance. The Baby's hand is a small olive leaf for peace (see detail of the Baby at right). The light around the Baby is of ivy leaves because ivy seems indestructible and ageless like the spirit of Christmas.



Close-up of library garden. Note surface; no pots show. Plants in front, crossandra; rear, kalanchoe.

Library garden: *Streptocarpus* Mini Nymph, kalanchoe, crossandra, coleus, *Begonia* Beatrice Haddrell and maidenhair fern.

photos by Edmund B. Gilchrist, Jr.



SOME LIGHT ON THE GARDEN IN YOUR HOUSE

by Libby Stephenson

Mrs. Thomas W. Stephenson has taken short courses at Longwood Gardens for 13 years. She has helped to found the Delaware Chapter of the Indoor Light Gardening Society. Based on her landscape design courses at Longwood, Mrs. Stephenson has taken two acres of good soil on a bare hilltop and a contemporary house site and fashioned them into a garden showplace. Mrs. Stephenson uses the principle of designing from the inside looking out.

It lifts my spirit to walk into a room in the dead of winter to see an 8-ft. garden in full bloom on the bookshelves.

Three years ago my husband suggested that our library needed redesigning; he urged me to do something, but not to spend a lot of money. In other words create a miracle! And that is what I did. Instead of dressing up the place with new draperies and slipcovers, I bought a rug and put in a light garden.

My efforts were trial and error. I read all I could about growing plants under lights, but there was a minimum of information available and it dealt mostly with basement areas. I'm allergic to basements, and I don't even have one. If I'm going to have plants, we have to live together full time! And that is exactly what I do!

My first library garden had two double 4-ft. industrial fixtures that I attached to the undershelf. They hung down 5 in. and I wasn't crazy about looking at the fluorescent bulbs. So I searched around and discovered the Shoplite* fixture, which is only 2½ in. deep and has aluminum reflectors to give more light. I installed them with my fluorescent growth tubes—a great improvement. But I could still see lights when I sat down and looked at the garden. I solved the problem by making a 4-in. valance with material from the local trim shop which completely hides lights and glare.

The effective area covered by a fluorescent tube is the length of the tube plus 3 in. on either side. Two tubes close together will give more intense light for blooming plants. My tubes are 4 in. apart with an aluminum reflector that fits under the 10 in. wide shelf. The blooming plant material should be directly beneath the lights—the fringe areas on the sides can hold ferns, coleus, and other lower light requiring plants. By giving the garden a 16-hour day (using an automatic timer) my plants bloom beautifully.

The 4-in. valance over my garden, which is 4 ft. off the floor, cuts glare from the lights. If the garden is to be higher up and the lights are visible, a para-wedge louver* placed beneath the lights can completely hide the lights. Even ½-in. white plastic egg crates placed under the lights remove all glare. (Egg crate is the name given to the plastic crate-like covering that goes over fluorescent lights.) For specific information see George Elbert's book. (See book list at the end of the article.)

Next I needed some containers to hold my garden. Along with basements, I'm also allergic to looking at a lot of flower pots. An occasional one—yes—if it's big, but hide all the others! I got the pots out of sight and solved the humidity problem at the same time. Here's how I did it.

Most houses are short on humidity, but plants and people thrive on it when the heating system is going full tilt. I solved the lack of humidity with deep containers and sphagnum moss. I sprayed six Perma-Nest trays a flat black; they were 13 x 15 x 3½ in. I then put a ½-in. layer of pebbles for drainage and filled them with damp sphagnum moss. (The excess water drains from the hole in the pot into the moss and pebbles, never letting the pot stand in water.) Sphagnum moss is a wonderful material that grows in acid bogs, in our New Jersey Pine Barrens among other places. It is harvested and dried and sold as horticultural sphagnum moss, not to be confused with milled sphagnum moss used to start seeds. Put the dried sphagnum moss, which comes in 2 bu. bags or smaller, in a tub of warm water. It can absorb 20 times its weight in water. Wring it out and put it in the tray. Do not water it again till it feels fairly dry when you stick your finger down in it. The damp moss adds humidity to the garden and keeps the pots (especially clay pots) from drying

continued



The Cart: *Sinningia eumorpha,* S. Dollbaby, *Coleus* sp. v. Magic Lace, pepper plant (purple sport), *Exacum affine, Streptocarpus rexi,* S. Constant Nymph, *Begonia* Helen Lewis, *Sinningia* Dwarf Florist's gloxinia and maidenhair fern. Left, on the floor, *Pleomele reflexa* and right, on the table, *Kalanchoe daigremontiana.*



Close-up of the cart: Left front, *Streptocarpus rexi* and Constant Nymph; (l. rear) pepper bush; center front, *Exacum affine;* (c. rear) *Sinningia eumorpha* and S. Dollbaby; behind figurine, coleus and extreme right, dwarf gloxinia.

out; it cuts down on frequent watering. Ferns particularly like it. Damp sphagnum moss is my plants' sitter. I can leave home for four or five days during the heating season, after watering everything properly, and they won't even miss me! **Sphagnum moss is the difference between success and failure in my light garden.**

I overlapped the edges of the trays along the shelves under the lights. The distance between the top and bottom shelves is 22 in. This allows from 5 in. to 12 in. from the lights for the blooms. (Incidentally, I reinforced the undershelf with unseen bricks to prevent a later collapse.) My garden now had humidity and light. In a well ventilated room, it would get all the air circulation it needed. All it lacked was the plants. All my pots are inserted in the damp sphagnum moss and covered up so the rims don't show. It is easy to change plants in pots where needed and doesn't disturb the whole garden.

I use a thin layer of a green dyed (looks natural) moss as a top dressing over the whole garden, giving a lovely natural look to the growing area.

For plant material I needed modest plants that would bloom for a long while. Using a lot of one variety creates an impact on the viewer. My favorite bloomer is *Streptocarpis* 'Constant Nymph' and all other nymphs in the series as well as the *S. rexi.* These are found in private greenhouses—but very seldom commercial ones. Mike Kartuz* has a wide range of them. Seed is available from both Kartuz and Park. Cuttings of the leaves root easily.

Since my plant trays are only 3½ in. deep, I try to use only 3-in. pots. The small pots confine the plants so they don't become so large. When a plant needs a larger pot, it is retired to the backup garden and a new plant is inserted.

Streps will bloom at least three months and I generally have enough coming along in my backup garden to keep the garden supplied.

Another plant that blooms a long while is *Kalanchoe blossfeldiana,* the more compact variety and the larger forms. These start in January and are good for three months if I cut off the old blooms. *Browallia* sp. and *Exacum affine* are other colorful plants under lights. And then there is the whole gesneriad family of episcia, sinnengia and gloxinia. I've raised gloxinias from seed with great success. I use the dwarf variety (Park) or I'd have to move out! These require very strong light to keep from getting leggy. I keep mine 3 in. from the lights when they're seedlings and raise the lights a bit as they mature; always keep them closer than most plants. They are tremendous bloomers and after they finish the first time, I cut them back above the first pair of leaves, and have a "second coming." When that's finished, I retire them to a dark cool place with fresh soil and wait until they start again.

For a softening effect in my garden I use ferns; I'm partial to maidenhairs and lots of coleus. I'm crazy about coleus. A little cutting gives a sturdy plant in no time. By keeping it pinched it always looks neat. And such colors and leaf shapes! I have all kinds in my outdoor garden. I make cuttings of those I want to keep for indoor use. Right here I should mention grooming of plants. One poor specimen, sickly or leggy or both, can ruin the effect of the whole garden. I'm ruthless about discarding plants to the trash heap, making new tip cuttings first. Plants can get out of control very quickly if allowed: In my garden I am the boss, pruning and pinching constantly.

By this time perhaps readers will be wondering about the bug-life in the garden. It is really nonexistent. For

one thing, any plant coming in from outdoors, except ferns which are inspected and hosed, gets upended in a five-gallon garbage can of water mixed with 2½ tbsp. of malathion. That takes care of most problems. I use only sterile soilless mixer for potting, which eliminates most soil problems, and I'm very careful about accepting plants from friends. They are dipped and repotted before they become a member of my plant family.

Since I use a soilless mix (I particularly like ProMix "B" produced by Premier and available at greenhouses or wholesalers; I add 1/3 perlite for extra drainage and lime to lower acidity), I must fertilize regularly. I use Mag-Amp, a slow release 7-40-6 fertilizer in the potting mix, ½ tsp. per 3-in. pot, and then a balanced fertilizer in very weak solution every time I water.

Now about watering the garden. I water the sphagnum moss when it needs it and the pots when they need it. Sometimes they need it at the same time. The kalanchoes like to be on the dry side, but enjoy the sphagnum moss humidity. The coleus like more moisture, the streps modest. All thrive on humidity, to which I add a regular misting to keep the pores of the plants dust free.

My library garden needs a backup area, and a room off the kitchen provides that. Here I can keep a sharp eye on my greenhouse under lights. This year we knocked out some walls, added extra windows, and have a delightful new garden-breakfast room. In this room I have my three-tiered cart for bringing my plants along from seeds and cuttings as well as another garden.

With the help of my builder's son we've created the mahogany three-level cart to my specifications. It has 5-in. deep trays, concealed lights and is really a piece of furniture. Standing 64 in. high, 52 in. wide and 19 in. deep, it makes a lovely, moveable (on wheels) garden that can go anywhere in the house. With the really deep trays I can hide larger pots and have bigger plants.

All my activity has had some effect locally. Friends, seeing my library garden, began asking for help in installing theirs. I've helped put gardens in barbeque pits, libraries, kitchens and front halls, lighting up otherwise dreary spots. They really do lift the spirits. And the natural outgrowth of all this has brought me into teaching my methods of gardening under lights and introducing people to new plant materials.

It has been astonishing the way indoor gardening under lights has mushroomed. We started a local chapter of the Indoor Light Gardening Society in Wilmington, which gives down-to-earth programs by its members. It is a fast growing group with interests in many different plant families, all of which can be handled under lights. I think a lot of its success is due to bringing the plants out of the basement and creating successful gardens in the living areas. From teenagers through college, young marrieds, middle age to senior citizens this weedless, no-bending, no-cloudy-day form of gardening has taken on the form of a horticultural revolution.

It is waiting for all who wish to try it!



Two-ft. Shoplite fixture has adjustable supports and can be hung from shelf. It is also available in three- and four-ft. lengths. Perma-Nest trays 13 in. x 15 in. x 3½ in. Stones for drainage. Plant materials: sphagnum moss, *Asplenium nidus, Nephrolepis cordifolia duffi,* coleus, *Sinningia* Dollbaby, columnea.

*WHERE TO GET SUPPLIES:

Shoplite Co., 566 Franklin Ave., Nutley, N.J. 07110

Kartuz Greenhouse, 92 Chestnut St., Wilmington, Mass. 01887

Park, Geo. W. Seed Co., Inc., Greenwood, S.C. 29646

Para-Wedge Louver Corp., 549 Hempstead Turnpike, West Hempstead, N.Y. 11552

There are many good growth fluorescent tubes available on the market. Sylvania, G.E., Dura-Lite and others in lengths of 24, 36, 48 and 96 in. They all work quite well. Prices and color quality of the lights vary. Personally I prefer the Dura-Lite tubes because the quality of light seems more like sunlight in color on the plants and doesn't distort their normal colors.

JOIN:

The National Indoor Light Gardening Society
Membership: Mrs. James C. Martin
1316 Warren Road
Lakewood, Ohio 44107
$5.00, includes an excellent bimonthly magazine

The Philadelphia Chapter, Indoor Light Gardening Society
Membership: Kitty Katz
2991 School House Lane
Philadelphia, Pa. 19144
VI 4-1870
$5.00
Meet at PHS the 4th Wednesday, 8:00 P.M. of every month. Meetings open to the public. Watch PHS NEWS for program announcements.

Delaware Chapter, Indoor Light Gardening Society
Membership: Mrs. J. H. Keen
2618 Cayuga Road
Dartmouth Woods
Wilmington, Del. 19810
1-302-475-5048
$3.00
Meet at Lombardy Elementary School, Wilmington, Del., first Wednesday of every month at 7:30 P.M.

Gloxinia & Gesneriad Society
Membership: Mrs. J. W. Roe
Box 174
New Milford, Conn. 06776
$5.00, includes bimonthly magazine

RECOMMENDED BOOKS:

The Indoor Light Gardening Book, George A. Elbert, Crown Publishers, 1973.

Fluorescent Light Gardening, Elaine C. Cherry, D. Von Nostrand Co., Inc., 1965.

Gardening Indoors Under Lights: A Complete Guide, Frederick H. and Jacqueline L. Kranz, The Viking Press, 1971.

Lighting for Plant Growth, Stuart Dunn and Elwood D. Bickford, Kent State U. Press, 1972.

●



HERBS AT CHRISTMAS

by Julie Morris

Every gardener I know has a patch of herbs somewhere in the garden. It may be a formal garden of parterres, a few plants grown in a bushel basket, or a dwarf rosemary tucked in the rock garden, but there is always a place for herbs. Herbs existed as a part of gardens since the early monasteries cultivated them for their medicinal and curative powers. Medicinal plants are now used for their ornamental properties. Herbs are a part of every growing season and have a special place in our Christmas plans.

*

Make a Christmas wreath of herbs for a friend suggesting that it be tossed on the fire once its decorative use is over. It will fill the house with a pleasant aroma. Wreaths of dried or fresh herbs are handsome presents for the "fifth" gardening season described by Adelma Simmons in two of her herb gardening books, *Herb Gardening in Five Seasons* and *A Merry Christmas Herbal.* A gift of herbs has always been special and as most gardeners know there is a great deal of folklore connected with such gifts. (Rosemary is for remembrance; it brings good luck and prevents witchcraft. Tansy was once the symbol of immortality and heliotrope cures insomnia and is considered a treat by dogs and cats. My own heliotrope plant is often pruned by a large wooly dog who eats the tender new leaves and considers the flowers a special treat.)

Every herb has its own legends. A thoughtful addition to a gift of dried herbs or plants is a card with its history and use in addition to cultural directions. Rooted cuttings made from plants at the end of the growing year make fragrant Christmas centerpieces to be later handed out to guests at holiday parties.

A gift of herb plants that can be grown indoors is certainly a long-lasting present for anyone. In *Herbs* by Louise Evans Doole a helpful list with herb uses is given for such plants.

anise — for fruit salads, soups, stews and teas
basil — for any dish containing tomatoes
borage — for salads
burnet — for its feathery foliage
chervil — for its lovely leaves and use as a garnish
chives — for countless uses
dill — good in salads and with fish
germander — for its handsome leaves
lavender — for its fine fragrance
lemon balm — to scent a room
marjoram — a must for many flavorings

Lots of sun and a slightly alkaline soil for the potting mixture will give winter-long pleasure. An easy soil mixture is two parts potting soil, one part peat, one part builders sand. Add to each half bushel of this mixture a 3-in. pot of crushed limestone and a 6-in. pot full of dried manure. Herbs can be part of an indoor light garden if natural sunlight is not available. In addition to their uses as flavorings, pieces of fresh herbs can be added to winter flower arrangements for a house-full of fragrance.

dried herbs for flavorings and fragrance

In *Herbs, Their Culture and Uses,* Rosetta Clarkson gives good drying directions for most plants. The right time for harvesting, methods of drying and handling both leaves and seeds are covered in detail. Instructions are given for cutting annual and perennial herbs so that additional harvestings may be made. Finally, in the chapter on gathering and drying herbs, there are many helpful hints for the storage and packaging of herbs for use throughout the year. We all like the image of bunches of herbs tied to barn rafters. You will read, however, that there is much more to the harvesting of herbs than you ever imagined. But it can be a satisfactory and happy experience when the results are to be presented to your friends.

Recipes for herb teas, potpourris and pomanders, as well as recipes using herbs in Christmas cooking, are given in several of these books. The scent of cloves, oranges, cinnamon and an assortment of other spices will fill your house as you keep wooden bowls of oranges, apples and cloves handy to make pomanders. The following potpourri recipe comes from *A Merry Christmas Herbal* by Adelma Simmons; it is only one of a dozen mentioned:

Spicy Potpourri (this blend may also be burned as incense)

2 cups dried rose petals
1 cup dried lavender
1 cup frankincense "pebbles"
¼ cup myrrh "pebbles"
½ cup crushed benzoine
1 cup sandlewood chips
¼ cup ground tonka beans
1 cup cut vetiver
½ cup coarsely ground cinnamon sticks
½ cup powdered cinnamon
½ cup powdered cloves
½ cup powdered nutmeg
¼ cup ground allspice
½ cup crushed coriander seeds
1 cup granulated orris root
20 drops oil of rose
4 drops oil of vetiver
4 drops oil of patchouli

In a large bowl, mix together petals, leaves gums and spices. Place orris root on top; add drops of rose, vetiver and patchouli oils; stir through; allow to mellow a month in a tightly-closed container, turning leaves over from time to time. Then package for Christmas gifts.

Ideas for children's projects are given by Louise Evans Doole in her book *Herbs and Garden Ideas.* This is one of the few places where I've found directions for making the old-fashioned rose petal beads, which are not only attractive but whose scent lingers on for months. You need a whole mixing bowl full of fresh rose petals. The petals should be put through a food chopper and all the juice and pulp gathered. After mixing the conglomeration together, spread it over an iron pan. The iron turns the pulp black. Chop again after 24 hours and put it back in the iron pan. Do this once a day for 10 days. After the 10 days, roll the pulp into beads; for a stronger scent add a drop of oil of roses. Enough pulp should be rolled up to make a smooth round bead. When it's finished, string it on a thin wire and let it dry thoroughly. The beads can be polished with a little petroleum jelly to make them glossy. This project will keep little fingers busy for a long time.

Herbal decorations for trees are easy to make. Decorating with natural materials is very popular and you might become proficient enough to make an entry in PHS's Annual Christmas Show. Use pomanders, cinnamon sticks, whole nutmegs and gingerbread men on your trees. Tie them to the trees with cheerful Christmas ribbons and add some colorful cookies when your tree is decorated.

Wreaths more than anything else mean Christmas is coming and in an herb gardener's household herb wreaths



signal a season full of fragrance.

In *A Merry Christmas Herbal* Adelma Simmons includes directions for many herb wreaths suitable from Advent through New Year's. Planting frames filled with moist sphagnum moss will keep centerpiece Advent wreaths fresh for the whole Advent season. Juniper and myrtle are the basic greens to use. Add any of the herbs associated with Christmas to the greens. If you use cuttings in the wreath, many will root and can be potted up after Christmas. Among the plants Simmons recommends are: lavender, grey or purple leaved sage, horehound, blue-green rue, santolina, rosemary, thyme, galium, pennyroyal, costmary, and fraise des bois.

Holly and ivy, other traditional Christmas plants, combined in a wreath are suitable for either table or door decorations. If the ivy plants are used in the sphagnum filled planting frame they will last a long time.

Artemisia gathered and dried in September can be shaped into wreaths for Christmas. Using the basic artemisia wreath, other herbs, leaves and blossoms can be added later. Add sprigs of fresh herbs and tie on a package of herb seeds as suggested in *A Merry Christmas Herbal* for a surprise "now and later" Christmas present. Adelma Simmons gives directions for herb and spice wreaths that can be used all year long, wreaths of flowering herbs including all the easy to dry plants such as yarrow, statice and goldenrod, lavender wreaths and a seed and sow wreath. She gives the directions for a fragrant Victorian wreath that include 30 to 50 dried pink rosebuds; 6 oregano blossoms; 6 rosemary sprigs, still green; 10 thyme sprigs with lavender blossoms; 5 or 6 pink hydrangea florets to be placed around the circle; 6 ambrosia sprigs at least, 12 to 15 if you have that many; 12 sprigs statice sinuata—pink, lavender and blue—for color, or 12 sprigs statice maritimum, sea lavender; and 25 sprigs of everlastings for delicate flowery textures.

These projects and many others, including recipes to try in your Christmas cooking, are given in the books listed at the end of the article. Reading about herbs is almost as delightful as actually using them. Their history and lore will be fun to study as you plan your Christmas projects.

Be sure to keep all the stems and branches of the herbs you used. Bundles of branches tied together with some bright ribbon and decorated with a few pine cones are cheerful gifts for the fireside. Thrown on a winter evening's fire, their fragrance will conjure up pleasant visions of the gardening seasons to come. Happy Christmas!

●

HERB PLANTS

Greene Herb Gardens
Greene, R.I. 50¢

The Herb Farm
Barnard Road
Granville, Mass. 01034

Merry Gardens
Camden, Maine 04843 50¢

Sunnybrook Farms Nursery
9448 Mayfield Road
Chesterland, Ohio 44026 25¢

The Tool Shed Herb Farm
Turkey Hill Road
Salem Center
Purdy's Station, N.Y. 10578

Well Sweep Herb Farm
Mount Bethel Road
Port Murray, N.Y. 07865

DRIED HERBS, SPICES AND OILS

Aphrodisia
28 Carmen Street
New York, N.Y. 10014 25¢

Cambridge Kenneth, Inc.
702 Madison Avenue
New York, N.Y. 10021

Capriland's Herb Farms
Coventry, Conn.

Caswell-Massey Company, Ltd.
518 Lexington Avenue at 48th Street
New York, N.Y. 10017

Meadowbrook Herb Farm
Wyoming, R.I. 02892

Snow-Line Herb Farm
11846 Fremont Street
Yucaipa, Calif. 92299

HERB BOOKS

The earliest gardening books were herbals containing lists of medicinal plants, their uses and culture. Even after nearly 200 years, Culpeper's *Herbal* is still in print and available.

PHS Library circulates more than 75 books about herbs; these include books on cultivation, drying and their uses in decoration and recipes. The books referred to in the article, plus some others of interest, are listed below.

Herbs, Their Culture and Uses by Rosetta Clarkson. Macmillan Co., New York, 1956.

Herbs, How to Grow and Use Them by Louise Evans Doole. Sterling Publishing Co., Inc., New York, 1962.

Herb and Garden Ideas by Louise Evans Doole. Sterling Publishing Co., New York, 1964.

The Years in My Herb Garden by Helen Fox. Macmillan Co., New York, 1953.

The Home Garden Book of Herbs and Spices by Milo Miloradovich. Doubleday & Co., New York, 1952.

A Garden of Herbs by Eleanour Sinclair Rohde. Dover Edition, New York, 1969.

Herbs to Grow Indoors by Adelma Grenier Simmons. Hawthorn Books, New York, 1969.

Herb Gardening in Five Seasons by Adelma Grenier Simmons. D. Van Nostrand, Inc., New York, 1964.

A Merry Christmas Herbal by Adelma Grenier Simmons. William Morrow and Co., Inc. New York, 1968.

salt

..... ice-free walks and dead plants

by Roland Daniels

Dr. Roland Daniels is assistant professor of environmental horticulture at Penn State University. He did his graduate work in mineral nutrition at the University of Wisconsin and is now working as an extension specialist with a particular interest in street trees.

Have you noticed that many trees and ornamentals next to sidewalks and roadsides have not grown much the last few seasons? Have you seen leaf scorch—brown leaf margins—on your shade trees? Do leaves turn brown but stay on the tree or dry up without losing their color? Do tops of trees turn yellow or drop their leaves (Fig. 1)? If so, consider the possibility of salt injury.

The use of salt to melt ice and snow has increased over the last decade, but is beginning to level off. In 1965-66, 356,000 tons of salt (NaCl and $CaCl_2$) were used on 55,000 miles of Pennsylvania highways. In 1972, according to one PennDOT source, 500,000 tons were used—a sizeable amount, but spread over more miles of highway.

We look at the use of salt to melt ice with mixed feelings, accepting the fact that it increases travel safety on our highways, but lamenting that it causes injury and death to roadside and streetside vegetation. Roads cleared of ice and snow help the traveler but the salt may ruin even the largest specimen trees.

Not all "salt" injury comes from deicing salts. Salinity may be induced by excessive fertilization of ornamental plants and lawns. No fertilizer is better than too much of the wrong kind. Soil tests will indicate whether fertilizer is needed and what amount to use.

Here's what happens when a plant is exposed to high salt concentrations. The salts may come directly from runoff of melting snow and ice; it may be splashed onto the roadside or the plants themselves by passing traffic; or it may come from runoff from salt storage piles or dumpage from snow removal. It makes its way into the soil where higher than normal concentrations accumulate outside the plant. Salt concentration decreases with increasing distance from the road edge; little, if any, can be found beyond 30 to 40 feet. Note in Figure 2 that the junipers most affected are those in the row closest to the sidewalk. Salt and moisture in soil and plants obey very strict chemical and physical laws. High osmotic pressure, due to salts in saline soils, causes water stress. The water is attracted to the salt and the plant cannot then extract it from the soil. A water deficit is created within the roots and the entire plant is deprived. This deficit is commonly called "physiological drought." Plants then must expend energy to provide a favorable water balance and a stable ionic environment within the plant. When a plant cannot continue to adjust internal salt concentration to those levels in the soil, the plant may die. What actually happens is that the plant uses so much energy attempting to reach that balance that no energy remains to continue accumulating the salt, and it literally works itself to death through energy starvation. Plants that make the osmotic adjustment without a decrease in growth are tolerant to salt.

Within limits, plants can withstand the osmotic dehydration (physiological drought) caused by excess salt. The salt accumulates within the plant until its concentration is greater than that of

Figure 1



the soil around the roots. If a plant is sensitive to toxic levels of Na or Cl, however, there is no advantage to the plant to possess this mechanism. This complicates the problem, since all injury is not the result of the induced water deficit but may also be due to sensitivity to sodium and chloride. The effect of the accumulation of sodium (0.3 to 0.5 percent of the dry matter of the leaves) and chlorides (0.5 to 1.5 percent of the dry matter of the leaves; 5 percent in some hardy species) within sensitive plants is a direct one, and injury is more severe as salt accumulation increases. The accumulation produces metabolic disturbances which upset normal growth patterns and indirectly inhibits growth. Regardless, the symptoms of sodium and chloride toxicity and salt-induced water deficit are so much alike it is difficult to tell them apart.

The contaminating salt also affects the uptake of other essential elements. Potassium deficiency has been observed in plants exposed to excess salt. The deficiency is caused by competition with Na for absorption sites in the roots—the balance shifts in favor of Na when salt concentrations become high. Chlorides influence the status of phosphorus in the plant.

Other environmental factors affect the severity of salt injury. Toxicity rises with temperature, presumably because temperature affects plant metabolism and water loss. Injury is accentuated during hot, windy days because greater demands are placed on the plant's ability to replace transpiration water. We know that is an impossible task considering the conditions that exist under salt stress. Salt resistance or relative resistance is greater in the shade than in the light, probably because of an indirect effect on temperature and metabolic rates. The presence of other ions (notably Ca) affect absorption of sodium salts, reportedly by its effect on cell permeability. Poor soil drainage increases salt injury because the excess salt does not leach out. Larger trees are more resistant than smaller ones of the same species. Plants not harvested annually may accumulate salt over a period of years and become increasingly susceptible to salt injury with time. Thus, over a period of years, even low soil concentrations of salts may cause a slow, progressive decline of trees. Salt aggravates drought conditions, compounding the problem of water availability from both salt stress and drought.

Tolerant plants adapt to high salt conditions in several ways. Some plants, for reasons not yet fully understood, can absorb water under conditions that normally inhibit absorption in other plants. Others are able to conserve the water they take up, thus surviving on less water. Deep-rooted plants may avoid the high salt problem because their roots reach beyond the contaminated zone around the plant. Figure 3 shows a maple severely damaged by salt injury while an oak—a tree with a deep root stem—remains healthy. Some root systems have an exclusion mechanism

continued



Figure 2

Figure 3



that does not translocate the excess salt levels to the top of the plant while other root systems limit the entry of the contaminating ions. Some species can take up a lot of toxic ions without damage. Others have specialized salt-excreting structures or may rid the plant of excess salt via guttation water, that is, water as opposed to vapor. An example is the droplets of water found on the tips of plants in the morning. A salt-tolerant plant may possess one or a combination of these protective mechanisms.

High concentrations of salt are not necessarily incompatible to plant life. Nearly one-half of the plant mass produced in the world is found in the ocean, a place with high salt concentration. Plants are also found in deserts and salt marshes, which have high concentrations of salt and extremes in water availability.

Plant species range in susceptibility to salt injury from very sensitive to very tolerant. Generally, trees and other woody plants are more susceptible than herbaceous plants. Conifers are more susceptible to injury than deciduous trees. Tables 1 and 2 list sensitive and tolerant species. Exclusion of a species from the list means that data are not available on salt tolerance.

Even with this basic information in mind, the problem of controlling or minimizing effects of salt contamination still remains. Efforts are underway to alleviate the problem. The use of deicing salt has leveled off in Pennsylvania; between 1.5 to 2 million tons of anti-skid cinders, incinerated mine waste, sand, and limestone are used along with less salt. Newer chemicals are being used which, so far, have not been shown to be injurious to plants; but their cost, compared to salt, prohibits widespread use. Proper road and landscape design can also help. Roadways are being designed to allow drainage of contaminated runoff to areas appropriate for their disposal. We should encourage the use of the most salt-tolerant species adjacent to areas where deicing salts are used or select planting sites not subject to salt-contaminated runoff.

●

TABLE 1. Species that are sensitive to salt

Abies balsamea, balsam fir
Acer pseudoplatanus, sycamore maple
Acer saccharum, sugar maple
Berberis thunbergi, Japanese barberry
Buxus sempervirens, boxwood
Carpinus betulus, European hornbeam
Euonymus alatus, winged euonymus
Fagus grandifolia, American beech
Fagus sylvatica, European beech
Juniperus virginiana, eastern red cedar
Larix sp., larch
Malus sp., apple
Picea glauca, white spruce
Picea pungens, blue Colorado spruce
Populus nigra italica, Lombardy poplar
Populus tremuloides, quaking aspen
Pseudotsuga menziesi, Douglas fir
Tilia cordata, littleleaf linden
Tsuga canadensis, hemlock

TABLE 2. Species that are tolerant to salt

Acer negundo, box-elder
Eleagnus angustifolia, Russian olive
Fraxinus pennsylvanica, green ash
Gleditsia triacanthos, common honeylocust
Malus baccata, Siberian crabapple
Morus sp., mulberry
Populus alba, silver poplar
Quercus alba, white oak
Quercus borealis, red oak
Quercus robur, English oak
Robinia pseudoacacia, black locust

Statement of Ownership Management and Circulation (Act of October 23, 1962; Section 4369, Title 39, United States Code).

1. Date of Filing: September 12, 1973. 2. Title of Publication: *The Green Scene.* 3. Frequency of Issue: bimonthly. 4-5. Location of Known Office of Publication and Headquarters: 325 Walnut Street, Philadelphia, Pa. 19106. 6. Names and Addresses of Publisher, Editor and Managing Editor: Publisher - Pennsylvania Horticultural Society, Philadelphia, Pa. 19106; Editor - Jean Byrne, 325 Walnut Street, Philadelphia, Pa. 19106; Managing Editor - Ernesta D. Ballard, 325 Walnut Street, Philadelphia, Pa. 19106. 7. Owner: The Pennsylvania Horticultural Society, Philadelphia, Pa. 19106. 8. Known bondholders, mortgages and other security holders holding one percent or more of total amount of bonds, mortgages or other securities: None. 9. Extent and Nature of Circulation:

	Average No. Copies Each Issue During Preceding 12 Mos.	Single Issue Nearest to Filing Date
A. Total No. Copies Printed (net press run)	5,808	6,212
B. Paid Circulation: Sales through dealers and carriers, street vendors and counter sales.	0	0
Mail subscriptions	5,123	5,288
C. Total Paid Circulation	5,123	5,288
D. Free Distribution (including samples) by Mail, Carrier, or other means	35	35
E. Total Distribution (sum of C and D)	5,158	5,323
F. Office Use, Left-Over, Unaccounted, Spoiled after Printing	650	889
G. Total (sum E and F should equal net press run in A)	5,808	6,212

I certify that the statements made by me above are correct and complete.

Jean Byrne, Editor

begonia 'cinderella' white

One of the best ways to improve your garden and at the same time add to your own skill and satisfaction is to grow your annuals from seed. For every type available in flats or bands at your local garden center, the seed catalogs list a number of additional varieties with characteristics that make them more desirable in many spots than the standard ones grown in the trade. The begonia described here is a good example.

My garden is a shady one, forcing me to rely heavily on impatiens and semperflorens begonias for bloom. The scale of the beds is quite large, the main plants being 3' to 4' rhododendrons and azaleas. These form an excellent background for the impatiens, but they tend to overshadow the low growing begonias commonly offered for sale. The solution to the problem is the 'Cinderella' begonia, which is bigger and showier than the ordinary semperflorens and much more useful in a shady summer garden.



'Cinderella' flowers are very large, often approaching two inches in diameter. They are single, with a large number of bright yellow stamens in the center, forming a solid puff the size of a marble, and producing a bicolored effect. The foliage is pale green and shiny, and the mature leaves are 3" to 4" long and 1" to 2" wide. Six months from the date the seeds are sown the plants stand two feet tall and are well branched, yet need no staking. I prefer the white form. 'Cinderella' is available also in rose with identical growing habit, flower size and culture. The thing I like about the white is the almost luminescent effect of the petals as the sun goes down in the evening.

I have never seen plants of 'Cinderella' for sale. I order seeds in early winter and sow them before February 15 in dampened milled sphagnum moss in a small plastic container with drainage holes. I put a plastic wrap over the top to make sure that seeds don't dry out, and to discourage scavenging slugs and mice, but I never cover the pans with anything that would exclude the light. The container is placed under my basement light unit and germination usually occurs within 25 days. The seeds are dust-like, and the seedlings are tiny, too. They grow well and must be transplanted within six or seven weeks. This schedule allows for individual potting into 3" pots sometime in April or early May, and planting in the garden in June.

I never try for particularly early begonias, because there are so many other plants for spring and early summer. Begonias are for July, August, September and until the first hard frost. Experience has taught me that there are few annuals that can be counted on to bloom continuously for much more than three months.

Once you have grown semperflorens begonias of any kind for bedding plants, they will be with you forever. They seed themselves prolifically. The seedlings may make nice little plants for school projects or the cutting garden, but bear in mind that hybrids will not breed true. If you want to achieve the same effect each year, you will have to get your seed from the seed company.

Ernesta D. Ballard

Ernesta D. Ballard is director of PHS. Her second book, *Garden in Your House,* was recently reissued in paperback by Barnes & Noble Books, as *Growing Plants Indoors.*

continued

growing interests



drawing by author

Madelyn Valais was chairwoman of the Philadelphia Cactus & Succulent Society exhibit at the 1973 Philadelphia Flower & Garden Show. At present her chief horticultural interest is propagating ferns. A recent center city dweller, Ms. Valais is converting the porch of her new Chestnut Hill home into a greenhouse for exotic plants.

aechmea fasciata

The bromeliad, *Aechmea fasciata,* epiphyte from the tropics of South America, is successfully grown as a flowering house plant in our climate. Its crisp beauty and its regenerative habit charm those who enjoy the suspense of waiting. Extending from a "cup" at its base, whorling silver-veined leaves reach high and gracefully tip. Once in its lifetime, a spike, clustered with pink bracts at its peak, emerges from the "cup." Daily, these bracts unfurl until minute purple-blue flowers peep out. After flowering, the bracts remain intensely pink for many months. Soon, one or more plantlets break through the surface potting soil. They are attached to the mother plant beneath the soil line, where it is moist and protected. I allow these to grow until they are 1/3 the size of *A. fasciata.* Then, I sever them with a clean, sharp knife at their juncture with the mother plant. I immediately pot them up (2" pots are sufficient) in a mixture of 1/3 osmunda, sand and sphagnum. Since they are epiphytic, their root systems will never be massive. *A. fasciata* will develop plantlets again and again. Once, I was surprised when a baby developed a baby of its own! Care of the plants is easy. Keep "cups" filled with water (rainwater is best). Fertilize with any half-strength solution of fertilizer into "cups" when a spike emerges or when plantlets emerge. Give humid conditions. Grow in dappled shade. Share plantlets with friends. Keep one for yourself. The plantlets will grow and flower in two to three years, rewarding patient wait.

Madelyn Valais



Harleigh R. Kemmerer is landscape architect and manager of the grounds maintenance department at Princeton University in New Jersey.

cedrus libani

Although at least 100 years old, this Cedar of Lebanon *(C. libani)* is no crotchety old centenarian but a magnificent specimen of a tree. It looks as though it should have come from the East as indeed its ancestors did. One can sense the mystery of the East in its tortuous, twisted limbs, the lowest ones forced to the earth below.

The tree is multi-hued. First there is the dark almost black-gray of its roughly rigged bark. Then the yellow-green of the lichens which grow in profusion on its limbs. Near the base of the tree the bark appears to be almost lavender. Finally we have the lush green of the matted, ever-present prickly needles.

The crown of the tree spreads out in a flat meshed canopy —a huge Japanese parasol.

The tree's charm is most appreciated during the early months of winter.

The tree pictured is on the Princeton University campus and it is a particularly handsome one. However, most of the older Cedars of Lebanon are equally attractive.

The Cedar of Lebanon is a tree for large areas. It is hardy in Zone 5 and does well in most locations if the soil is not excessively wet. It is readily established from early spring transplanting. Insect, disease, and physiological problems do not bother it. However, 2, 4-D products should not be used in the immediate vicinity.

Harleigh R. and Roberta Kemmerer

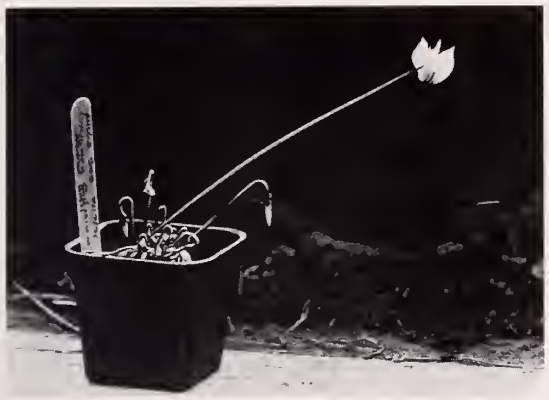


photo by Gene Baldwin

Nancy Baldwin has a wide interest in horticulture. She is attending classes at the Barnes Arboretum for the second year. She has worked at the Philadelphia Flower & Garden Show as part of the team of young people assisting the floor manager. This past summer she held a job gardening at Swiss Pines and worked with Alpine specialist, Lee Raden.

cyclamen cilicicum

Cyclamens have been written about since Plato's time in the fourth century, B.C. Since then, their quiet, delicate beauty has spread from their native habitat of Asia Minor and Greece to many rock gardens around the world. One cyclamen has been consistently neglected because people believe incorrectly that it needs excessive tender care: *Cyclamen cilicicum.* In this country gardeners should be enjoying it as far north as New York City. It is my favorite spot of color in the November garden.

C. cilicicum, originally found in the *Cilician taurus,* in southeast Asia Minor, is smaller than the better known *C. neopolitanum.* The flowers yield in the early winter on slender 4 in. stems. They are delicately scented, with pale pink corolla lobes ending at the base in a prominent crimson blotch. The petals, curving gently in their erect posture, give the small inflorescence a dignified grace. The leaves provide a second glory. Appearing shortly after the first blooms, they are heart-shaped, with a leathery texture of dark green and marbled silvery designs. The whole aspect of *C. cilicicum* is one of refined elegance as it demurely teases the gardener's early winter doldrums.

All cyclamens nurture best in a shaded to semi-shaded, well drained location. Thus they make excellent subjects for a cool niche in the rock garden, a naturalized setting in the woods, or even under the great shadow of a beech tree. If left undisturbed for a number of years, they will serve as a decorative and competent ground cover.

Difficulty in propagation lies only with the grower's supply of patience. Tubers are available but establish themselves slowly, increasing in girth, not through division. Seeds provide the only expeditious means of raising a sizeable stock. Sown immediately after ripening in a leaf mold-rich soil with a fine gravel covering, they should be given protection against rodents and heavy freezing. Once the corms have reached a good size, the mice and chipmunks will ignore them. A limestone grit mixed with the soil will aid growth and stimulate flowering. An annual feeding of dried manure and bone meal is also recommended. *C. cilicicum* should be kept rather dry during the summer season. It can be most attractively combined in the autumn-winter garden with colchicums, autumn crocuses, nerines and varieties of galanthus.

Nancy Baldwin

●

classified ads

DR. MARTIN POLE LIMA BEAN SEED is available from Fern Hill Farm, Jessup Mill Road, Clarksboro, N.J. 08020, at $1.00/pkt. (12 seeds) + 25¢ postage per order.

Wanted: Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd., Media, Pa. 19063. Telephone Ben Palmer, TR 2-7206.

FOR SALE. Plants for house and greenhouse, including rare and hard to find varieties. Call TU 4-0497.

Polly Fairman's Indoor Bonsai Greenhouse and Japanese Gardens, 103 Mt. Lucas Road, Princeton, N.J. 08540. By appointment. 609-924-3202. Indoor Bonsai a specialty. Gifts for plant loving friends and relatives. Supplies, planters. Saturday morning workshops and clinics for all Bonsai problems. Grooming and boarding. Japanese landscaping. Lectures for garden clubs at Poly-En Gardens.

Horticultural Pottery, Terra Cotta Fountains, Topiary Frames, Water Gardens. We do custom designing. 767 Chester Creek Road, Chester, Pa. 19015. Call 874-2266.

Wanted: Greenhouse gardener one day a week, private estate, Fort Washington. Must have experience growing and repotting orchids. Reply to Box 3, Pennsylvania Horticultural Society.

"Nellie Stevens" holly trees for sale from 3' to 9' tall. Dark glossy green like the English parent, heavy berries, dense and hardy like its Chinese parent, they are beautiful. Gordon Wilbur, 1285 Bristol Rd., Southampton, Lower Bucks County, by appointment please, 215-357-0421.

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.





THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Just for the birds—
horticulture at the zoo

JANUARY • FEBRUARY • 1974



3



9



13



16



29

THE
green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 3 Jan., Feb., 1974

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*President*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Charlotte L. Archer
M. M. Brubaker
Frederic W. Clark
George M. Harding
Nancy Howard
Craig S. Oliver
Ralph M. Sargent

DESIGNER
Charles Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 3, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1974

in this issue:

1	Editorial *by Ernesta D. Ballard*
3	Just for the Birds *by Charles W. Rogers*
9	Trees as Accident and Basket Cases
13	The Queen of Fruits *by John F. Gyer*
16	When the Choice Is One of Ten, What Do You Do? *by Lee Lester*
21	Digging for Information *by Ed Lindemann*
22	The Tyler Arboretum: Winter-Aconite *by Gertrude Wister*
24	The Morris Arboretum: From First Blush to Final Scarlet . . . Cercidiphyllum Is a Regal Tree *by Ellen Van Pelt Wells*
26	Books and the Green World: More Than Plants *by Julie Morris*
28	Classified Advertising
29	Contrasts for Winter Garden Beauty *by Russell O. Jones*
32	Growing Interests
Front Cover:	Hummingbird hovers over *Ixora coccinea* at Philadelphia Zoo.
Back Cover:	The long-tail manakin of Central America in a setting of bottlebrush *(Callistemon lanceolatus)* and in the foreground at the bottom, golden trumpet *(Allamanda cathartica hendersoni)*.

Front and back cover photos by Edmund B. Gilchrist, Jr.



horticulture in the delaware valley

EDITORIAL

"Horticulture in the Delaware Valley" is the subtitle of *The Green Scene,* and with this issue we take another step towards the objective epitomized in that subtitle. Our objective is to become the forum and spokesone for all the residents of the area who are interested in green things. Up to this point, our articles have been provided solely through the Pennsylvania Horticultural Society and its staff. Now, for the first time, we present articles emanating from two other Delaware Valley horticultural institutions, the Morris Arboretum in Chestnut Hill and the Tyler Arboretum in Lima. In the years to come we hope to add more.

This first broadening of our constituency seems like a good occasion to ask ourselves just what *The Green Scene* is, and what distinguishes it from other gardening magazines? The answer is that *The Green Scene* is part of the program of the Pennsylvania Horticultural Society. It is not dependent for its existence on advertising, or on subscriptions, or on newsstand sales. It does not have to cater to a nationwide audience; rather, it draws its financial strength from all the resources of the Society—dues, flower show receipts, preview dinner subscriptions, nest egg and donations. And it serves primarily the members of the Society, reflecting their interest and concerns and attempting to satisfy their needs.

In the long-run we are counting on the symbiotic relationship between Society members and *The Green Scene* to give our magazine some of the quality that characterized the great gardening journals of the 19th century. By way of example, we found in the Society's library, the 1876 volume of the *Gardener's Monthly and Horticulturist,* edited by Thomas Meehan which stated that it was "devoted to horticulture, arboriculture and rural affairs." We found that at least half the text of that famous publication was supplied by correspondents, who wrote in, apparently without solicitation, to comment on Mr. Meehan's observations, to call his attention to new varieties, to expound on such subjects as "Aesthetics in Conservatories," to pose and answer queries, and generally to make *The Gardener's Monthly* sprightly, interesting and informative.

That is the way we would like to see *The Green Scene* develop. From the beginning we have followed the practice of calling on local horticulturists, many of them PHS members, to write articles. Now we are broadening our base to take in horticultural authors identified with local arboreta. Some months ago, we received our first letter to the editor. We hope that the future will bring correspondence, discussion, perhaps even disagreement. The great advantage of *The Green Scene* is that it owes allegiance only to the gardeners and horticulturists of the Delaware Valley. It can become just as good a magazine as they would like it to be.

Ernesta D. Ballard





photos by Edmund B. Gilchrist, Jr.

just for the birds

HORTICULTURE AT THE ZOO

by Charles W. Rogers

Charles W. Rogers, Jr., has been staff horticulturist at the Philadelphia Zoo for four years. For the previous 25 years, he worked with the Zoo's consultant, Idella Krause. Mr. Rogers lives in Norristown where he raises a wide variety of vegetables in his garden. His greatest horticultural challenge at the moment is to try to establish nandina in the area. He has been trying to winter them and managed to get those at the Zoo to produce berries last Christmas.

North of the Tower of Babel, Nebuchadnezzar built an imposing structure for one of his wives, the daughter of the king of the Medes. She was apparently unhappy with the hot, dry and dusty Babylon and longed for the green hills of home. To please her, Nebuchadnezzar built a series of circular colonnades rising to a height of 75 ft.; the top terrace was supplied with rich soil to a depth of many feet, to support not only flowering plants but large trees as well. This garden was ingeniously watered by a series of hydraulic engines operated by slaves drawing water from the Euphrates. Here, 75 ft. above the noise of the public way, the King's harem could enjoy the oasis known by the Ancient Greeks as one of the Seven Wonders of the World, the Hanging Gardens of Babylon.

Since ancient times people have sought to create lush gardens in alien climates. Modern man, with his greenhouses and conservatories, continues the tradition. But at the Philadelphia Zoological Garden we have carried it one step further. Although we have created a lush garden for people to enjoy, it is primarily a refuge and a habitat for birds.

So welcome to the world of the tropics in Philadelphia and the Eleanor S. Gray Hummingbird Exhibit at the Zoo. Here under a glass roof and skylights grows an amazing tropical jungle just for the birds, the magnificent hummingbirds as well as other birds of the New World tropics. The house was planned, planted and pampered to provide a natural setting and climate in which these rare birds can breed and reproduce.

continued

The northern approach. The limb cutting across the top is part of the fiberglass tree with its barely discernible epiphytes. Vine cutting across is the ubiquitous tetrastigma; spotted leaves at 6 o'clock are *Dieffenbachia picta;* extreme left, foreground, *Ficus benjamina.*



Six ft. below floor level at stream: at 6 o'clock, *Jacobinia obtusior*. Plant enveloping the vine is cassia; upper left is hibiscus; bottom right is *Beloperone guttata*.

the planning

The planning and preparations for any such undertaking present many problems: what are the plants' requirements; the birds' requirements; building and structural requirements of the city building codes, the site adaptation. The architect must consider all of these problems and still design a workable, aesthetically pleasing structure. The persons responsible for the ultimate success of the project planning are John Griswold, curator of birds for the Zoo, and Henry D. Mirick, architect. The Hummingbird House is a conservatory-like structure with an internally controlled climate. The temperature is maintained at a constant 70° to 72°. A series of water nozzles emitting a fine spray regulate the humidity at a minimum 50%. The humidity is further maintained by a number of waterfalls and pools.

The only change or addition to this heat, humidity and air conditioning process is the application of green shading compound to the glass roof of the central exhibit area from the end of April until September. The first spring without the shading produced thermometer readings of 110° on sunny days. Technology thus provides the climate in which a tropical habitat can grow and flourish.

Hummingbirds are native only to our hemisphere and, with the exception of a few migratory species, live in the tropical regions. So the job was to create a planting that would correspond to a New World tropical jungle. Grades were established, waterfalls, pools, streams and a huge fiberglass and cork bark tree were designed. A soil mixture of three parts topsoil, one part sand and one part peat moss was prepared. Since there is no bottom or floor in the exhibit, we had no drainage problems. Feather rock was used throughout the exhibit. From it was sculpted a replica of a Mayan Olmec head, which now seems to be awaiting discovery beside a marsh in the south planting area. With the building complete, soil mixture in place and the staging set, it was time to plant.

the plants

Plant selection began with the plants already on hand in the Zoo greenhouse. The larger trees and



A quetzal, the national bird of Costa Rica, sits on a tetrastigma vine. Off center at bottom is arrowleaf bamboo; also note Spanish moss at center.

shrubs came from nurseries in Florida, from local commercial greenhouses, from members and friends of the Zoo and the Pennsylvania Horticultural Society. Generous help was also given by Longwood Gardens.

A basic design for four planting areas was prepared. The south area was designed as a marshy Central American exhibit. The man-made marsh in which the Olmec head sits is planted with *Cyperus alternifolius* and *Alocasia indica metallica*. The surrounding dry land is planted with *Heliconia psittacorum* and *Spathiphyllum clevelandi* both of which blossom almost constantly. A fine collection of small trees and shrubs complete this area. One of the most satisfying shrubs in the planting is *Jatropha hastata* (carmine flower), growing to a height of six ft., open branching, and producing delicate carmine-colored flowers in clusters that persist for at least nine months.

A waterfall cascading out of a large clump of white and coral impatiens tumbles 20 ft. down over rocks and into small pools to create a meandering stream from which the birds may draw water to drink or bathe. From the waterfall a plank bridge invites visitors through the large center area. A glass roof over the entire planting enables the many trees and plants to blossom. The most colorful of these are: *Calliandra haetocephala* (red powder puff), *Callistemon lanceolatus* (bottlebrush), *Acalypha hispida* (chenille plant), and *Beloperone guttata* (shrimp plant). The long red flower of the chenille plant seems to be a favorite plant of the quetzal, the Costa Rican national bird, which is about the size of a parrot. The pink flowers of the shrimp plant attract the hummingbirds to feed on its nectar. From the bridge one can stand and watch ducks on the stream.

Overhead is a huge artificial tree that has been mistaken for a live oak. The tree was constructed on the site beginning with iron reinforcing rods, chicken wire, fiberglass cloth and rosin. The last step was to laminate natural cork bark to the fiberglass tree.

The large planting pockets in the top side of the limbs of the tree enabled us to plant many species of epiphytes. The soil mixture used is

continued

four parts spaghnum moss, two parts peat moss, one part sharp sand and four parts licorice root mulch. Where the epiphytes are grown in the branches or in the crotch of the limbs, osmunda is used to create a protective mass to cover the growing root systems. The most successful of the epiphytes have been the bromeliads. All of the many species of this family have grown profusely with no disease problems. A number of species of gesneriads were planted but have not survived. Cattleya, dendrobium, oncidium, phalaenopsis, and stanhopea orchids have grown and blossomed well. The bud and blossom, however, have proven to be very appetizing to the larger birds, who have enjoyed them so much that all are eaten before full blossoming appears. *Tillandsia cyanea, Tillandsia recurvata, Tillandsia fasciculata* and *Tillandsia usneoides* (Spanish moss) have been great successes. As in any jungle, vines grow to climb and run all over the trees. We have planted three that have thrived. Two of them, *Thunbergia grandiflora* and *Allamanda cathartica hendersoni,* blossom for a long period of time. The third vine, *Tetrastigma voinierianum,* has produced thick, grape-like vines, running and climbing everywhere. It acts as a host, providing support for many other plants and vines. *Polypodium aureum glaucum* (hare's-foot fern) and *Platycerium bifurcatum* (staghorn fern) complete the planting of the tree.

The north planting features a fast-running stream that falls into a deep rock-lined pool with every crack and crevice sprouting *Aglaonema* (Chinese evergreens), ferns and moss. Several large trees and shrubs including *Datura suaveolens* (angel's trumpet) provide great perching places for the birds. One can usually find several hummingbirds and swallow tanagers perched here. *Hibiscus rosa-sinensis* and *Jacobinia obtusior* bloom freely over a carpet of *Zebrina pendula discolor* (wandering Jew). Four varieties of crotons grow well, keeping the brilliant color of their foliage.

maintenance

The upkeep and care of the exhibit can be roughly divided into daily, weekly and monthly chores. The fiberglass tree with its epiphytes is watered daily, and the remainder of the exhibit every other day. Dead and dying leaves must be picked. The monthly chores include the training and pruning of trees, shrubs and vines. Insects and disease must be identified and controlled. Only the mildest forms of insecticides can be safely used. We have had to rely on Volck oil spray and a very fine spray of water under high pressure. Although occasionally

Marshy section. At 12 o'clock *Cyperus alternifolius;* at 9 o'clock, broadleaved plant *Heliconia psittacorum;* extreme right at bottom, *Philodendron imbe,* a self-heading hybrid. The strutting birds are American avocets.



some scale and mealybug appear, we have not sprayed the exhibit during the past 18 months. We control red spider in a primitive fashion: we simply remove any infected plants. The other two common insect pests, white fly and aphids, have been controlled by an even more primitive and basic method. The birds eat them as they appear, thus adding protein to their diet.

Another monthly chore was to be the replacement of any dead or damaged plants. However, fortune has smiled on us and few, if any, plants have been replaced in the last two years. The last, but perhaps most important, monthly chore is the feeding of the plants. Peter's 20-20-20, a water soluble, is used in feeding everything except the orchids which take Peter's 10-30-20. Large shrubs and trees are fed with 20-20-20, using a Ross root feeder, which develops a deeper growing root system. Because of the vigorous growth of the large shrubs and trees, this feeding has been changed to a semi-annual chore.

Everything has not gone smoothly. Plants did die in the first year. Some plants were removed as the competition for space and sunlight proved the rule of the survival of the fittest. One of the basic concepts of the project was to get as many flowering plants as possible to blossom. Before long the biggest obstacle to blossoming was not sunlight or water or feeding but the birds. A number of tanagers, flower-piercers and banana quits were released in the exhibit only to eat most of the buds and blossoms as soon as they appeared. These birds were caught and removed so that the hummingbirds could have blossoms to feed upon. After four years of trial and error we've achieved a happy balance. The number of flower eaters has been reduced to an acceptable level so that the flowers can bloom.

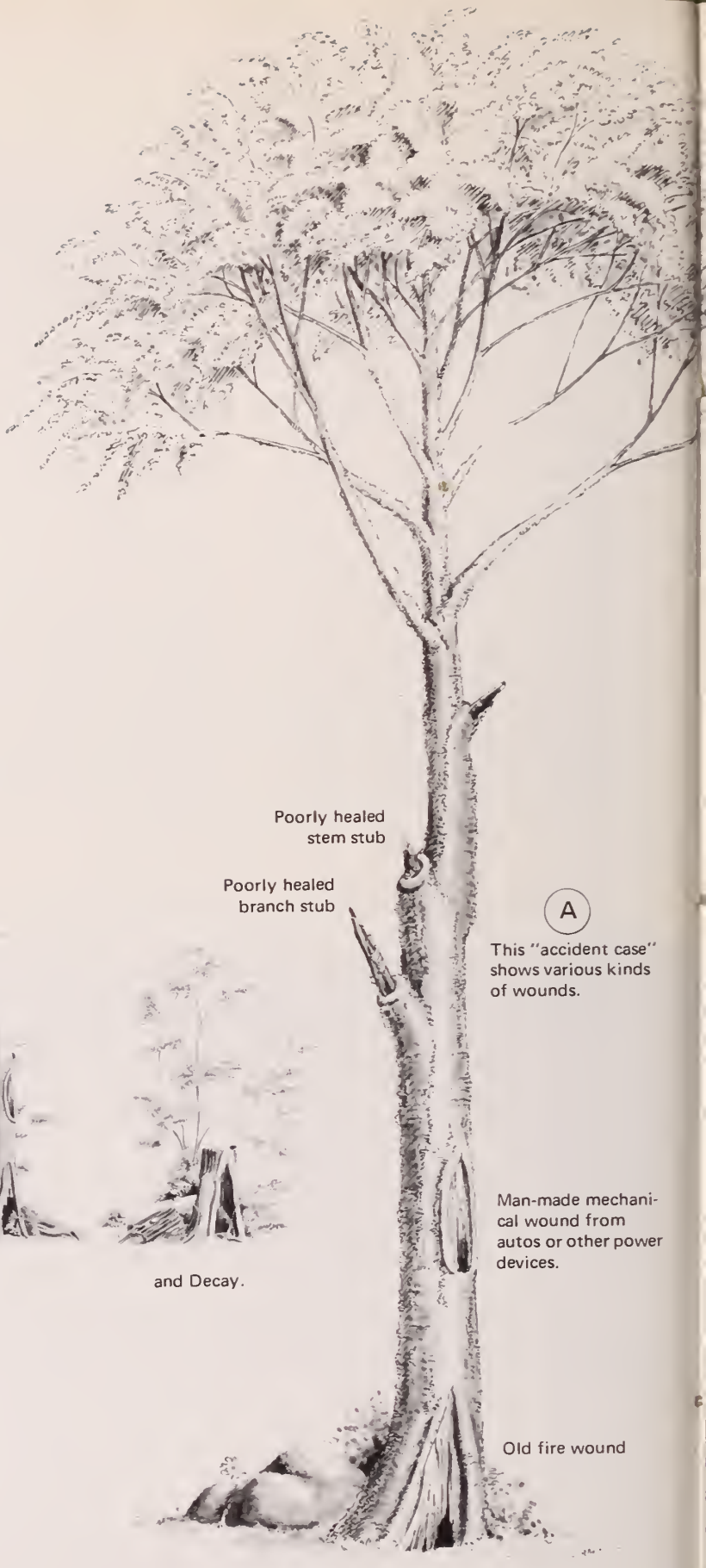
As visitors walk through the exhibit some of them begin to realize that they, not the birds, are the ones caged or restricted. The birds have the complete freedom of full-winged flight. The sight of people ducking their heads to avoid the oncoming hummingbirds and quetzals as they streak by at great speed is commonplace. The real joy and appeal of this exhibit becomes apparent when you realize that you are not spectators. You are participants at one with live free-winging birds in a manmade jungle. You are free to watch the hummingbirds and other birds feed from the flowers and the feeders provided to satisfy their large appetites. The green of the lush jungle, the songs of the birds, the sounds of the falling water and the bubbling of a spring call to all gardeners. ●

The southern approach. Center limb shows tillandsia (collected from the wild, species unknown) streaming downward. The foliage is rising from 8 ft. below the floor. On the left is *Phyllostachys aurea;* center, slightly to the left, *Chaemadorea seifrizi;* material at corner of triangle, *Cassia beareana.*





Trees Grow; Wane; Die; and Decay.



Trees

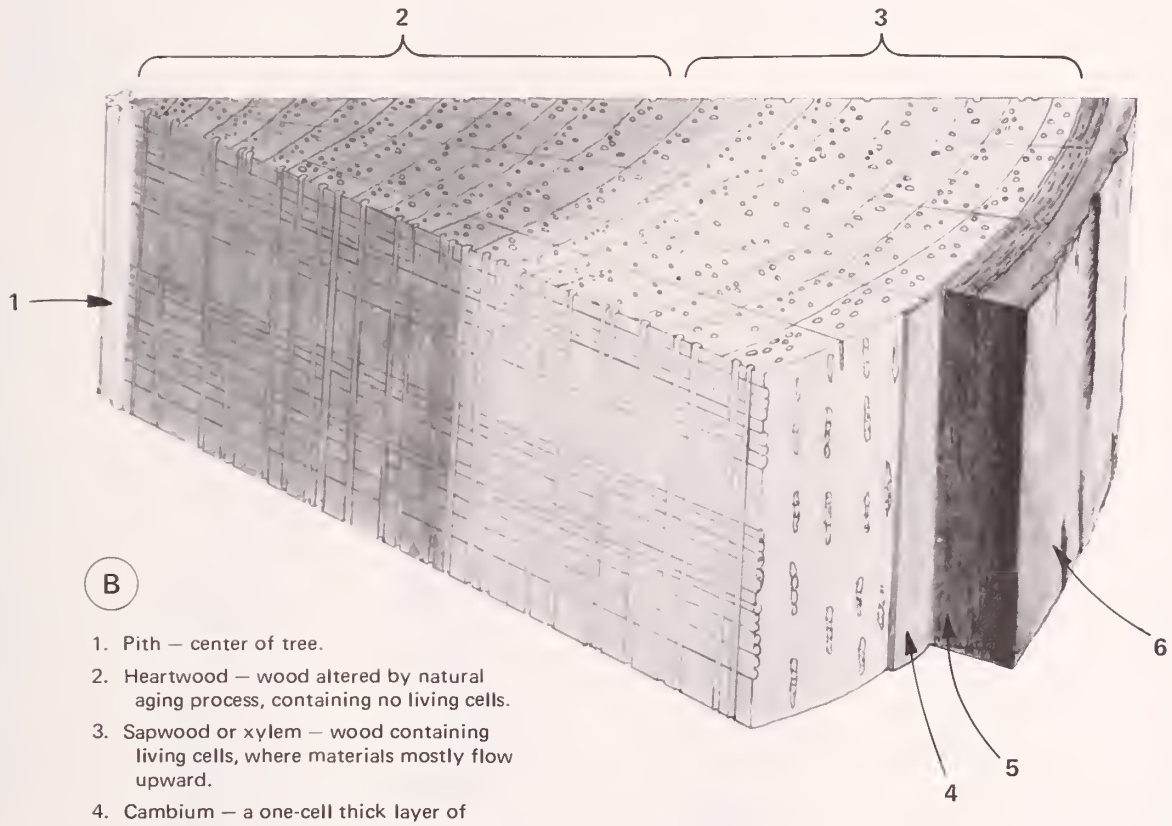
The major cause of damage and death in all species of trees throughout the world is infection following wounding. We've all seen trees grow, wane, die, and decay, but now we have a simple scientific explanation for how this complex decay process—the most drastic result of tree injury—works.

At least 50 Fairmount Park trees die each year from wound diseases. Another 100 succumb annually along Philadelphia streets, while additional trees of unknown quantity perish in private backyards from the infections that follow tree injury. Depending on size and location, the removal of each "basket case" tree costs anywhere from $35 to $2,000, not including the extra price paid in threats to safety, losses of beauty, and inconvenience.

Trees die from many causes: diseases, fires, air pollution, environmental extremes, insects, and animals. But microorganisms entering and infecting a tree after injury are the major cause of tree defects, decay, and death. This is true in most tree-growing cities, suburbs, and forests throughout the world.

Trees are unique in that they live longer, and grow taller in size and larger in mass than any other organism known to man. But, large as they are, trees can be wounded rather easily (illus. A). All it takes is penetrating their bark and exposing their wood

continued



B

1. Pith — center of tree.
2. Heartwood — wood altered by natural aging process, containing no living cells.
3. Sapwood or xylem — wood containing living cells, where materials mostly flow upward.
4. Cambium — a one-cell thick layer of living cells that produces new tissues.
5. Inner bark or phloem — where materials mostly flow downward.
6. Outer bark — protective shield.

as accident and basket cases

key to drawings

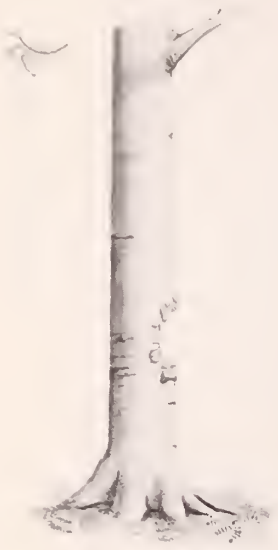
host response to wounding, chemical reactions—to stop invasion.

invasion processes by micro-organisms—to go through the barriers set up by the tree.

infection of dead and dying tissues on wound surface.

decay processes.

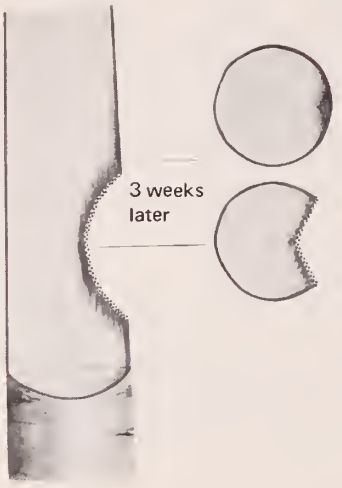
(C) A succession of microorganisms is involved in the processes that result in decay.



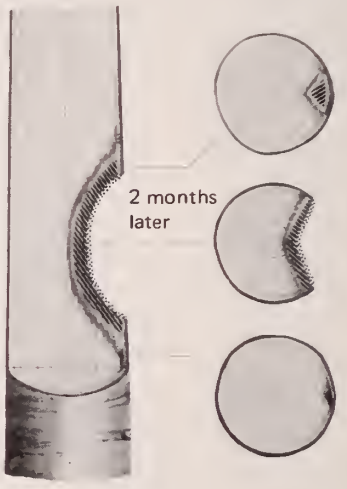
Injury at the base of an American beech.



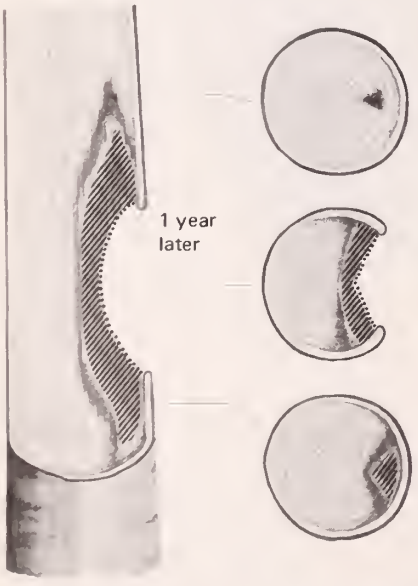
Immediate chemical response by tree to wounding.



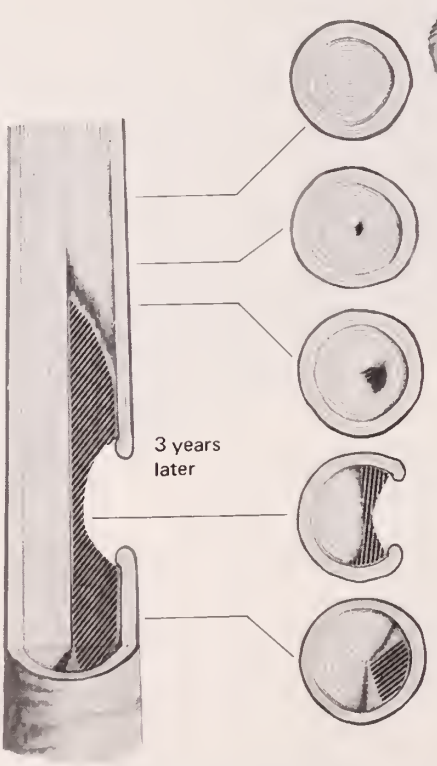
Infection of wound surface by bacteria and nondecay fungi.



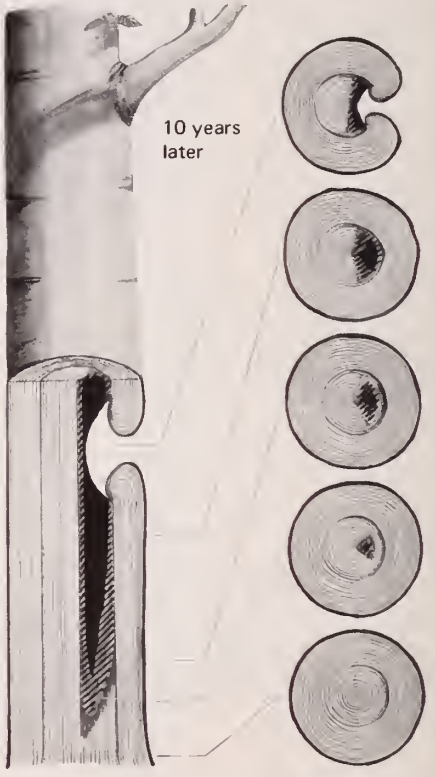
Invasion of wood behind wound by pioneer bacteria and nondecay fungi. Slight discoloration on wound surface.



Discoloration following invasion by microorganisms.

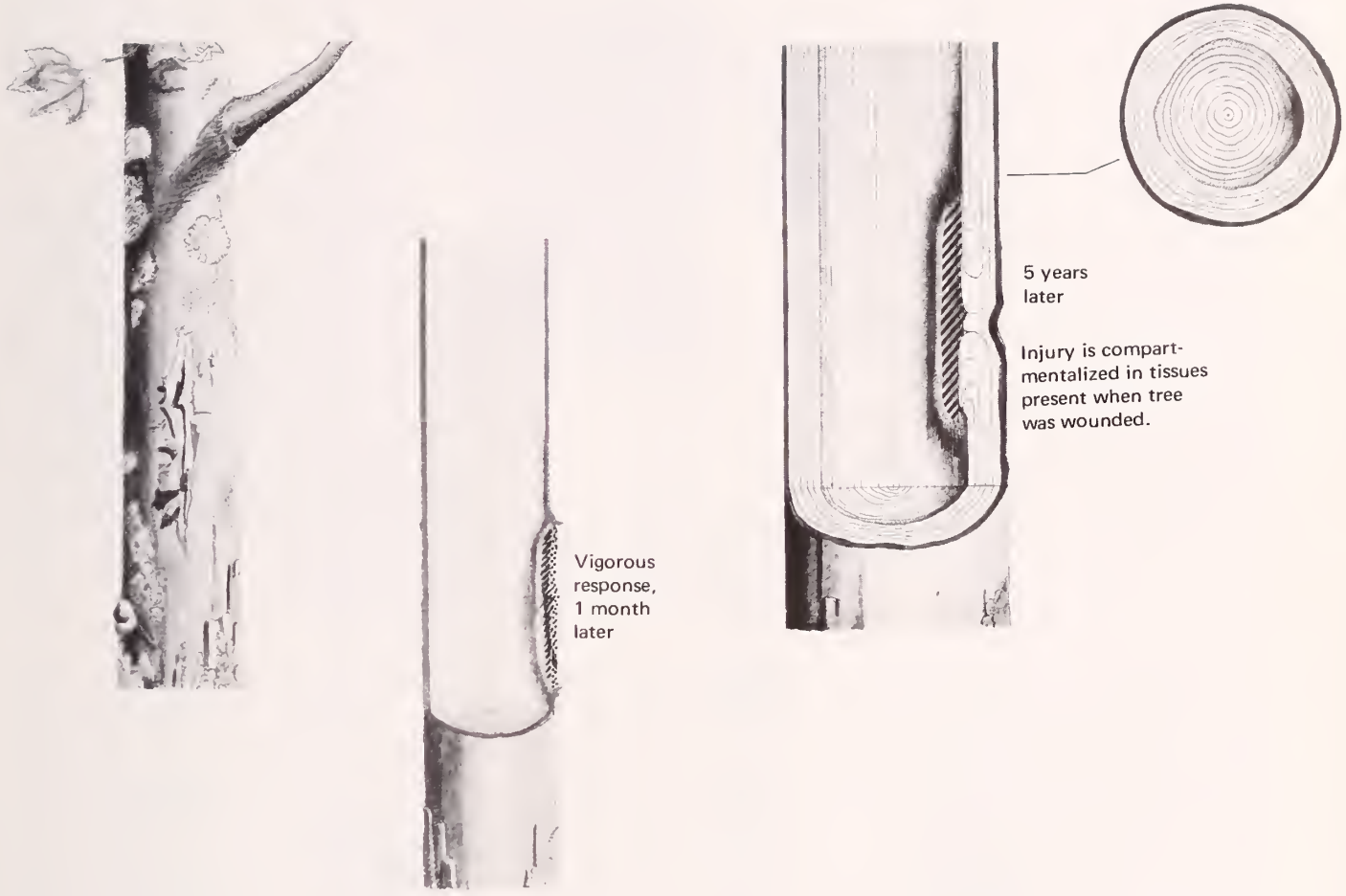


Further discoloration, mostly by bacteria and nondecay fungi.



Development of decay mostly by decay fungi. Discoloration still present.

(D) **Compartmentalization of a healed mechanical wound on a vigorous red maple:**



beneath. Insects, birds, animals, fires, and storms are agents of such wounds, damage, and injury. But often man is the author of the accidents—either maliciously through acts of vandalism, or inadvertently by thoughtlessly driving a nail or by carelessly driving an automobile, lawnmower, or other power machine into them.

Forest Service Plant Pathologist Dr. Alex L. Shigo of Durham, N.H., has been studying the steps that occur in a tree after wounding and the factors that aid recovery. In his special Pioneer Forestry Research Project, Dr. Shigo has discovered that injury activates a sequence of events in the tree that form distinct and predictable patterns of discoloration and decay in its wood. He has further established why certain trees recover from injury with minimal damage, while others eventually die.

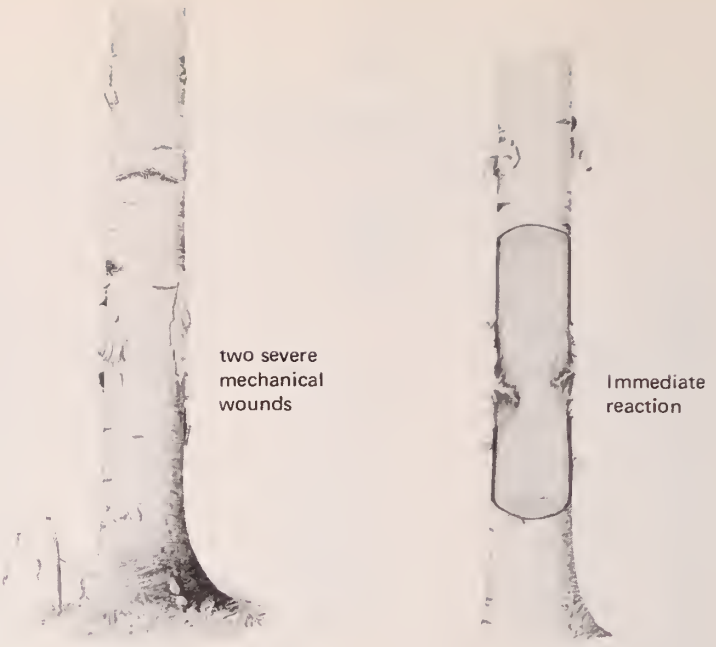
According to Dr. Shigo, the process is complicated, since it involves the interaction of microorganisms, environmental factors, and the tree itself. "When a tree is hurt," says the plant pathologist, "it reacts much like the human body by attempting to fight off the attack of harmful disease agents to halt their infection and to heal itself. The tree's protective reaction begins immediately upon injury when it releases chemicals formed in the wood around the wound. Trees have developed this highly sophisticated protective system over the millions of years of their lifespan. And most healthy, vigorous trees can put up a successful fight to inhibit invasion by most microorgansims and to heal their wounds without much damage being done" (illus. C).

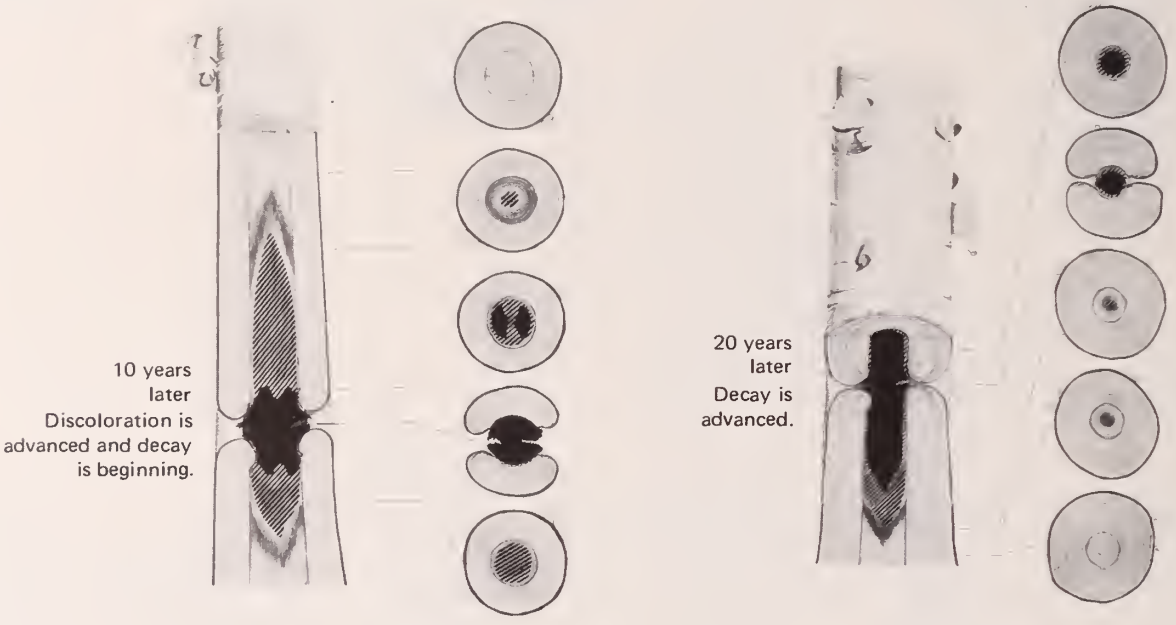
When the protective system fails, however, the tree is in for a long struggle; but struggle it will to go on living in spite of the wound diseases that afflict it. This struggle following wounding usually happens when a tree is severely wounded or when it is in less than top-notch condition—possibly having been weakened by the cumulative effects of a long period under many minor stress factors. In either case, unable to heal quickly enough or to chemically resist particular invading microorganisms, the break in the bark of the unprotected tree serves as an entryway for bacteria, fungi, and viruses, the microorganisms that cause disease (illus. B, p. 9).

When initial microorganisms grow through the wound's chemical barrier, a second wave of different micro-

continued

(E) Compartmentalization of poorly healed, severe mechanical wounds on a paper birch:





organisms is sure to follow in succession until they succeed in ultimately decaying part of the tree. The rate at which they are able to decay and decompose the tree depends on the vigor of the tree and on its interaction with the particular microorganisms (illus. C, p. 10).

Once invaded, a tree will continue its struggle for survival by walling off its infected tissues, in effect, compartmentalizing and containing them. Successive annual growth by the tree will add new, unaffected wood around the compartmentalized and damaged tissue (illus. D, p. 11). Because of compartmentalization and annual growth, which adds to the tree's diameter, it is possible to predict the extent of discoloration and decay inside the tree on the basis of external signs of wounding (illus. E, above).

It should be borne in mind that although some microorganisms are destructive, others are beneficial. In fact, without them, organic matter and once-living materials would not decompose and we would have a difficult time continuing our normal life cycles.

What can you do to prevent your possibly even eventual basket cases? First, prevent man-made wounds by trees from becoming accident and exercising care when working around trees. If trees do get wounded, you can still help to minimize their damage by cleaning out wounds promptly. This is best done by cutting the torn bark and shaping the wood beneath like an ellipse, if possible. Further to help the injured tree heal itself, remove all its dead, dying, and weak branches; water and fertilize it. If you suspect that infection is progressing despite your efforts, be sure to call in professionals for advice.

Adapted from *A Tree Hurts, Too,* a new publication by the USDA Forest Service's Northeastern Forest Experiment Station, Upper Darby, Pa. Illustrations by David M. Carroll, courtesy of the Forest Service.



Hilton

the QUEEN of FRUITS

by John F. Gyer

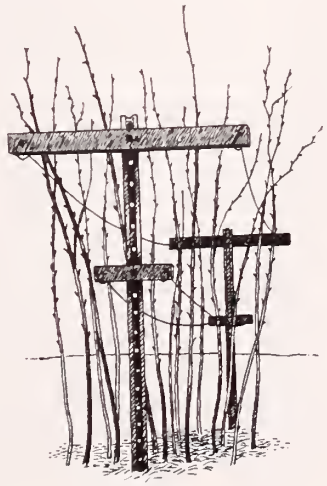
John Gyer has grown raspberries for more than 25 years. His interest in the fruit began during high school in Penn Yan, New York, when he was active in 4-H programs. His interest has continued and expanded to his present experimental planting of more than 30 varieties.

One of my pleasant growing-up memories is the smell of fresh-baked raspberry pies cooling in the kitchen. I gathered the berries by the quart from bushes behind the house. My mother served them in great wedges of pie to ease the hunger of the men after the work of forking loose hay from cock to wagon and from wagon to the hot but aromatic mow. There are few farms now that handle loose hay. The efficient effort of machines has replaced the farmer and his pitchfork. Like the small farm, raspberries too have been the victim of efficiency. They have not bowed to the full mechanization of their culture. As a result, they are rarely found fresh in stores, and since each berry must be picked individually by hand, the few that are sold are expensive.

For a gardener this need not be true. The present varieties grown from virus-free stock yield well and the bushes can be trained into an attractive hedge. They yield heaviest and are better flavored if grown in full sun. All require pruning and some need trellises. They are subject to a few insect and disease pests, but minimal spraying gives adequate control.

Site and Soil

Raspberries can grow in soils that range from sand to heavy clay, but like most plants they prefer a well-drained loam. They cannot tolerate wet feet. If the only sunny site you have is wet, make a raised bed about a foot above high water table. Prepare the soil by mixing some ground dolomitic limestone and compost into it. Raspberries prefer a slightly acid soil reaction (pH about 6.5), but I have found that dolomitic limestone helps improve flavor. Their fertilizer requirements are minimal. I have had good success with a mulch of lawn clippings applied just as the spring growth reaches 6 to 8 inches. This is supplemented with low-nitrogen soluble fertilizer (10-30-20) applied with the irrigation water through a siphon system and the sprinkler hose described below. Too much nitrogen produces bitter berries and canes that are not winter hardy. Though not proven, I suspect that trace elements (zinc, molybdenum, boron) supplied in some soluble fertilizers help the general vigor and flavor of the berries.



T-Trellis

Water and Trellises

Raspberry soil should never dry out co.npletely. Supplemental water is needed, particularly if a dry spell comes during fruiting season. As a rule of thumb, a hedgerow system of berries will transpire nearly an inch of water a week. The water should be supplied during active growth but reduced in the fall to slow growth and harden canes for the winter.

I have found it handy to construct a T-trellis for cane support and watering (see diagram). Metal posts are spaced about fifteen feet apart. Wooden arms, 2 x 4, 18 in. to 24 in. long, are attached about 2½ ft. to 3 ft. above ground level, and wires (12 gauge, galvanized is good) are run through holes about one inch from each end of the arms. This defines the hedgerow and supports the canes. A short 2-in. to 4-in. long arm is attached about 1 ft. to 1½ ft. high and a wire run through holes in it. A perforated three-tube sprinkler hose is tied, hole side down, to this wire. This trellis makes a permanent installation

continued

which can support canes when they are heavy with fruit and irrigate the crop without wetting either berries or foliage. Irrigation systems that water from above and wet the berries promote mold on the fruit.

For long-caned varieties such as Amber Queen and Willamette, a row-trellis is useful. For this, erect posts that stand six feet or so above soil level. Tie the canes to wires spaced about two feet apart on the posts. The raspberries for this system should be pruned to a row about 12-18 in. wide.

Pruning

Raspberries, in general, need pruning twice a year—in July, to remove canes that have fruited and to promote sturdy sucker or shoot growth, and again in late winter or early spring to remove damaged canes, thin and top for fruit production. Red and black varieties differ in their growth habit and in their pruning requirements.

In the spring, red and amber varieties produce numerous sucker canes. These grow during the summer and fruit the following year. The objective of summer pruning for these varieties is to provide light and air for proper development of sturdy sucker canes. Old fruit wood is removed, weak suckers are thinned out, and the hedgerow is pruned back to proper width. The suckers are not cut back or topped during the summer. Sturdy, straight canes will produce the best fruit the following year.

Black and purple varieties produce new shoots from a crown and only rarely sucker. The objective of summer pruning here is to produce sturdy, branched canes for next year's production. New shoots should be cut back or topped to about 18 in. to 2 ft. in June while the growth is soft. Old wood is removed in July and the weak shoots are thinned. Generally, the lateral branches can be plaited on the trellis supports for neatness and to prevent tip rooting. These laterals should not be pruned during summer growth, even though vigorous varieties such as Clyde can produce branches over 12 ft. long.

Red and amber varieties that bear both summer and fall crops are pruned like the regular red and amber types. However, spring sucker growth is vigorous and shades out the summer crop. Even when it doesn't, berry size is inferior. I prefer to cut the canes of these varieties to the ground in the spring and to simply thin the sucker canes in July.

Winter-spring pruning has the same objective in all groups; prune to produce a good crop of large fruit. Cut reds and ambers back about 1/3 of their length, or to about 5 ft. Thin the canes to stand about 8 in. apart (six to 10 large healthy canes per linear foot of row). This is best done in late spring just as growth starts, so that winter-killed canes can be identified and removed. Cut the laterals on blacks back to about 12 buds. Purples can generally support 18. Thin to four to six canes per crown. Too much fruiting wood will shade shoots excessively and reduce the next year's crop.

Heritage



Winter Damage

Next to continuous rain when the berries are ripening, winter damage causes the greatest yield losses. In the Delaware Valley, soft, early bud growth is stimulated by warm spells in February and March. Cold periods which follow can kill the buds and injure the cambium in the stem. Some varieties produce loose bud scales which do not fully protect the buds from drying out in winter wind and sun. Wax emulsion or polymer emulsion sprays can reduce desiccation damage, but if late winter or early spring frost disrupts tissues the cane is either killed or greatly weakened. Damaged canes do not sprout and grow vigorously. They should be removed in the spring. Often varieties hardy in the North are sensitive to winter damage in the Delaware Valley. Environmental factors such as excessive fall water and high nitrogen fertilization can increase winter damage.

Diseases such as spur blight and anthracnose can increase winter injury. Fungicides applied during early growth can minimize these problems.

Rabbit and rodent damage is nearly uncontrollable. Fencing helps, but in one night I have lost half the canes in several rows because of an undetected hole in the fence. I have found no effective sprays, granules or preventives. If rabbits abound, raspberries will be winter killed.

The entire winter damage problem can be sidestepped by using fall-bearing varieties. Their berries are borne on spring sucker growth which does not have to survive the winter.

Diseases and Insect Pests

The major disease group of raspberries is the virus mosaic. In general blacks are more susceptible than reds, ambers or purples. Infested canes will be slow to leaf out in the spring and they will generally be unthrifty. Berries



According to Donald K. Ourecky and G. L. Slate of the New York State Agricultural Experiment Station, Geneva, Jewel (No. 628) has proven to be vigorous, erect, hardy, consistently productive, propagated by tip layers, and slightly susceptible to mildew. No infections of anthracnose have been observed to date. Winter injury has not limited production since selection. The station has recommended its release for commercial planting or home gardens.

will be small and dry. In reds, the leaves will be mottled or show a slight blistering and the berries will be small and crumbly. Mosaics are best avoided by planting virus-free stock and controlling aphid activity. If this is done, blacks and reds can be grown in neighboring patches.

The major insect pest is the tarnished plant bug. It attacks green berries and kills individual drupes. When the berry ripens it is small, deformed and crumbly. A severe infestation can be disastrous. For control, follow the advice given by your local agricultural extension agent. Insecticides should be used with caution since some are very toxic to raspberry foliage.

Cane borers, cane girdlers, Japanese beetles, and various blights and fungus may be a problem in some years, but good patch housekeeping can minimize their effect.

Propagation and Transplanting

Black and purple berries are increased from tip-rooted layers. In July or early August the tips of the lateral branches of healthy plants are bent and buried vertically 3 in. to 4 in. into the ground. These will root and can be reset the next spring. Blacks should be set out at least 3 ft. apart in rows spaced at least 6 ft. apart. Purples should be set at least 4 ft. apart in rows spaced at least 8 ft. apart. When these varieties are purchased from nurseries, tip layers are usually the most successful, even though they will not bear until the next year after planting. Bearing age plants are much less satisfactory. Potted, actively growing tip layers are ideal for transplanting when they can be found.

Reds and ambers are propagated from suckers. I have had best luck transplanting clumps of sucker plants dug in a lump of soil as early in the spring as possible. In 1973 clumps of Heritage suckers transplanted in January produced an excellent crop that fall. Nursery plants should be set 2 ft. apart in rows at least 6 ft. apart. Again, potted suckers are ideal transplants, but bare root plants are generally shipped by nurseries. These should be soaked in water overnight before planting.

Newly transplanted berries are susceptible to wilt diseases if the soil contains inoculum and is kept too moist. The plants will grow vigorously six to eight inches high. At this point the lower leaves will wilt and die, the stem will develop a black or brown streak, growth halts, and the new plant dies. Few varieties are resistant. The best solution to this problem is to provide good drainage. Also, plants should not be set where tomatoes, potatoes or peppers grew the previous year.

In 1919 the United States produced over 61 million quarts of raspberries at an average price of 22¢ per quart. New Jersey and Pennsylvania produced over two million quarts apiece. Today, California, Oregon and Washington grow the bulk of our crop, which is reckoned in half pints. The decline of this industry involved its high labor expense, the short shelf life of the fruit, and most important, severely virus-infected nursery stock. Virus infections rapidly reduce yield and cause poor fruit quality. In the 1920's when it was realized that virus mosaic was diminishing the supply of raspberries, various agricultural experiment stations established programs to search out and propagate virus-free stock. Today, as a result of these programs, healthy nursery stock is becoming widely available. Because of their vigor and productivity the home gardener in particular should plant only certified virus-free raspberries.

Varieties for the Delaware Valley

Because of winter damage to the canes of summer fruiting varieties, fall-bearing raspberries are most successful for our area. Heritage, new from Geneva, has the best overall quality. But September is a good late-bearing variety. Fall Red is early, but the fruits are small. Cherokee, a new introduction from Virginia Polytechnic Institute, is said to be large-fruited and hardy. Fall Gold has the best flavor of the lot, but its berries are soft, and its yield is rather low.

Summer crop raspberries that have been reliable here include the old favorite Latham. Most others, which may be fully hardy in the uplands of Pennsylvania, are marginal in New Jersey. These include Newburgh, Taylor, Milton, Anelma, Hilton. Pocahontas, another V.P.I. introduction, is said to be hardy here and to have large berries. Polaris is a small-berried variety, but its canes are hardy. Amber, or Amber Queen, is a good yellow variety that has done well in New Jersey.

All black raspberry varieties are hardy here, but they seem to have smaller fruit than those grown farther north.

Purple raspberries, particularly Clyde, are hardy and productive. They make excellent jams and jellies.

Today work at the few experiment stations that still have raspberry breeding programs is directed towards large firm fruit and growth habits that are suited to mechanical harvest. The most active breeding program in the East today is that at Geneva, New York, under the direction of Dr. Donald Ourecky. Several of his selections show great improvement over present varieties. After sufficient virus-free stock is produced, these introductions should significantly help to increase the quality and quantity of fresh raspberries available for both gardeners and commercial growers.

●



photos by Edmund B. Gilchrist, Jr.

WHEN THE CHOI



enhouse was converted to a plant room. The southern exposure at the Lesters' house in Graterford, Pa.

by Lee Lester

Lee Lester operated The Potting Shed for seven years. She has lectured before garden clubs and has been a judge at the Philadelphia Flower and Garden Shows.

No doubt Don and I enjoyed supplying plants to people when we operated our commercial greenhouses. But we eventually acknowledged that our enterprise left us little time to enjoy our own plants.

We decided to close The Potting Shed, the name we gave our greenhouses, and return to hobbyist status. The transition brought a grave problem. We had been surrounded by thousands of plants, which we knew intimately and loved. If we dismantled both greenhouses we could keep only about a dozen in favorable places in our home. The prospect of living with only a few was a barren one, a shift we were unable to make.

The smaller greenhouse was attached to the solid north side of our home and we decided to convert it into a plant room. Thus converted, it would become an integral part of the house. We envisioned the enchanting prospect of breakfast and lunch with our plants.

We tore off the fiberglass roof, laid a conventional roof of plywood and asbestos shingle and nailed Johns Manville white insulation board to the interior ceiling. The double mylar walls on the east, south and west were ripped off and windows, three over six to match those of our 1789 colonial farmhouse, were installed. The east wall took five windows; the west four with a central space between each two left for a heating unit; the south eight windows, four on either side of the door which originally provided access into the larger greenhouse. Outside, above and below the windows we used 1 x 12 spruce board with 1 x 2 strips to seal the joints. Inside, we stapled Owens-Corning fiberglass insulation to the walls and covered them with the same

continued

CE IS ONE OUT OF TEN, WHAT DO YOU DO?

when you have 1000 varieties in the greenhouses you are closing, how do you pick the 100 you will keep?



Rebricked floor in plant room. Southern exposure. Large hive-like plant hanging by the door, *Tripogandra multiflora.* Tall plant on the floor beneath it, to the left, *Osmanthus fragrans.* On the table, *Billbergia nutans;* pot low on floor in front of door, *Aechmea fasciata;* plant on rectangular pedestal, *Carrissa grandiflora* 'Bonsai,' to the right of it, *Cyperus diffusus.*

board and batten we used outside. The dimensions of the room are 25½ ft. by 15 ft., adequately heated by a gas wall furnace supplying 30,000 BTU.

At the level of the windows we hung bracket-supported, wooden trays of pine, constructed in slats for water drainage, 3½ in. deep and redwood-stained.

The brick floor presented three problems: how to repair broken corner areas that could not be concealed easily by plants; how to insulate for warmth as well as from entry of slugs, sow bugs and other pests, and how to guarantee that excess floor moisture would filter out.

We lifted the bricks, carefully piling them in the adjoining areaway; these old, handmade bricks are infinitely more beautiful than the machine product. Then we raked the sand to achieve a gradual slope toward the east end where a small opening was to facilitate drainage. We spread 4 mil thick polyethylene over the floor for insulation. Over this we hauled in cinders for a covering of 4 in. Finally, we topped the cinders with a covering of fine sand 2 in. deep.

We carefully laid the bricks in the original simple pattern. In strategic places where plants and pedestals were to stand, we substituted commercial bricks to replace the broken ones. We dusted sand repeatedly over the floor and swept it with a soft floor sweep. A broom is not suitable. Instead of brushing sand into the cracks, it whisks it out. Finally, we hosed the floor and again swept it with damp sand. From time to time as the sand settled it was necessary to repeat the sand-sweeping process.

We painted the entire room with a mildew-resistant paint, white to get full benefit of reflected light. At the side of each window we placed brackets made of brass with a 4-in. vertical section for screwing to the wall and a 14-in. section jutting away from the wall at a 45° angle for full basket clearance. Four 10-in. white globes hung at slightly different lengths from the ceiling gave pleasant illumination.

The windows are stationary except for two on the east wall and two on the west to provide cross ventilation. For these we built fixed screens. The door in the south wall provides additional screened ventilation. Before installing a floor fan we wanted one winter's experience to see whether additional circulation of air was necessary.

We had dealt with our most troublesome problem before the final sale of The Potting Shed when we decided which plants to keep. The central question then had been: on what basis were we to choose? We wanted large plants to stand on the floor; plants to sit on pedestals; smaller plants for window trays and plants that are loveliest in hanging baskets. At length Don and I agreed on these stipulations:

1. No plant was to be kept that periodically had to be cut back. We wanted plants that looked beautiful at all times.
2. Plants that grew tall to give height and circumference.
3. Plants with more unusual thrust and shape.
4. Plants of grace and delicacy.
5. Small plants for window trays.
6. Plants for hanging baskets.
7. Plants that did not rely exclusively on our pruning to keep a beautiful countenance.



Fatsia japonica

Eastern window. Large tree dominating room: *Ficus benjamina.* Plant on white pedestal: *Begonia masoniana;* extreme right foreground: *Begonia scharfi;* continuing up on extreme right: Begonia 'Silver Jewel'; moving from the right to left: *Hedera helix* Shamrock, *Begonia rex* 'Merry Christmas.' Three hanging baskets, left to right, *Peperomia griseo-argentea, Episcia dianthiflora,* and *Hypocyrta radicans.* Behind the chair, *Podocarpus macrophylla.*



8. Plants that bloomed at various times of the year or bore berries or fruit.
9. To be excluded were plants attractive to white fly because of all pests white fly is the most difficult to control.

It was a dramatic afternoon before the final sale when Don and I walked through the aisles putting "sold" labels into pots and, to understate the situation, not without travail. Finally, it was done; we had chosen our future horticultural companions:

Floor Plants for Height and Circumference

Ficus benjamina (weeping fig)
Pinus radiata
Dracaena marginata
Brachychiton acerifolium (flame tree)
Fatsia japonica
Dizygotheca elegantissima
Podocarpus macrophylla (Buddhist pine)
Chamaerops humilis (European fanpalm)
Punica granatum nana (dwarf pomegranate)
Osmanthus fragrans (sweet olive)
Begonia 'Sophie Cecile'

Plants for Pedestals: (We used concrete building blocks placed on end either one or two high)

Crassula argentea (jade plant)
Pandanus veitchi (screw pine)
Begonia scharffi
Begonia masoniana (iron cross)
Begonia 'Fischer's ricinifolia'
Begonia 'Black Magic'
Anthurium scherzerianum (flamingo flower)
Cryptbergia x rubra
Reineckia carnea
Myrtus communis (Greek myrtle)
Bougainvillea x buttiana 'Barbara Karst'
Pittosporum tobira
Carissa grandiflora (natal plum)
Hibiscus rosa-sinensis
Cyperus diffusus

At the Base of the Pedestals

Bromeliads: *Aechmea* x maginali, *A. fasciata* 'Silver King,' *A. recurvata* benrathi; *Vriesa* x mariae

Plants for Hanging Baskets

Begonia schmidtiana
Begonia secreta (macrocarpa)
Begonia Di-Shasta
Episcia dianthiflora
Davallia fejeensis (rabbit's foot fern)
Peperomia griseo-argentea
Cissus rhombifolia (grape ivy)
Aeschynanthus pulcher (lipstick plant)
Chlorophytum elatum (spiderplant)
Muehlenbeckia complexa (wire vine)
Plectranthus australis (Swedish ivy)
Hypocyrta radicans
Rhipsalis penduliflora
Platycerium alcicorne 'Regina Wilhelmina'
Tripogandra multiflora
Alternanthera versicolor (Joseph's coat)
Helxine soleiroli (baby's tears)

Plants for Window Trays

Begonia rex 'Merry Christmas' and 'Helen Teupel'
Begonia 'Anna Christine,' 'Silver Jewel,' 'Esther Albertine,' 'Verde Grande,' 'Black Knight'

continued



Southwestern window. Lathe house is visible to the right. Hanging plant in right-hand corner, *Chlorophytum capense.* Hanging plant center, *Begonia secreta* ('macrocarpa'). Plant in center of windowsill, *Punicum granatum nana.* Hanging plants, top left, *Plectranthus australis;* below left, *Alternanthera versicolor.*

Acorus gramineus variegatus
Tolmiea menziesi (piggy-back plant)
Ficus pumila minima and *Ficus pumila*
Schlumbergera bridgesi (Christmas cactus)
Cryptanthus bivittatus minor (in a strawberry jar)
Cryptanthus bromelioides tricolor
Cupressus sempervirens (Italian cypress)
Serissa foetida variegata
Adiantum decorum (Pacific maid)
Cereus peruvianus monstrosus
Hoya carnosa variegata
Laurus nobilis (sweet bay)
Osmanthus ilicifolius variegatus (false holly)
2-5" pots of *Osmanthus fragrans* (because we couldn't bear to part with them)
3-6" pots of *Punica granatum nana* (for the same reason)
Citrus mitis (Calamondin orange)
Hedera helix Shamrock
Tamarindus indica
Calliandra tweedi
Lysiloma thornberi
Citrus meyeri (Meyer lemon)
Hippeastrum (amaryllis)
Echeveria elegans (Mexican snowball)
Sedum dasyphyllum
Jasminum gracile magnificum (angel-wing jasmine)
Cuphea hyssopifolia (elfin herb)
Pyracantha coccinea Tiny Tim
Euphorbia splendens bojeri (crown of thorns)
Malpighia coccigera (miniature holly)
Trachelospermum jasminoides (star jasmine)
Fortunella margarita (Nagami kumquat)
Cotoneaster apiculata (cranberry cotoneaster)
Columnea microphylla
Peperomia fosteri

Only the pomegranate seemed disgruntled and lost leaves when we brought the plants indoors. But recovery came in February. Curiously, *Ficus benjamina* and podocarpus did not drop a leaf although under greenhouse conditions they did when they came indoors.

Watering was a changed procedure. We no longer used a hose. Pots were watered by container. Baskets were carefully put into one bucket of water and into another for dripping before they were hung again. This was done to reduce excess humidity. With the advent of cold weather we shut the windows and substituted glass panels for the screens in the doors. Subsequently we discovered mildew on our rex begonias and concluded there was insufficient air circulation. We treated the affected plants with Karathane and installed a small floor fan.

We chose an oblong table and chairs of wrought iron in cheerful red, a vivid contrast to the prevailing green and it is here we spend long hours Saturdays and Sundays. It is stirring to look at the pomegranate and think of its biblical antiquity, the romance of the jasmine, the tranquility of the weeping fig, the mysticism of the Buddhist pine. The arid desert is here, the dripping, jungled rain forests, the steep mountain slopes inhabited by ferns and epiphytes, and the mysterious rivers where palms grow along the banks. The universal world is with us in the presence of our horticultural exchange students exciting our imaginations about their distant homelands. For our plants their new quarters have proved an unqualified success; for us an unqualified joy. ●



digging for information

HORTICULTURAL CORRESPONDENCE

by Ed Lindemann, horticulturist

bagworm

Q. I've enclosed some cocoons that have affected one Douglas fir quite badly and another one slightly. Other trees nearby (white pine, tulip poplar and wild cherry) do not seem affected.

D.P., Newtown Square, Pa.

A. Your Douglas fir tree is being attacked by bagworm *(Thyridopterix ephemeraeformis)*. At the caterpillar stage this insect builds itself an elongated sac out of pieces of leaves from its host plant. As the larva increases in size, the bag increases in size. It overwinters in the egg stage in the old bag.

To control this particular pest I suggest that you hand pick and destroy the bags during the winter. Spray with diazinon, malathion or sevin when the young worms first appear. The spraying is usually done between May 1 and June 1. I suggest that you spray a second application seven to 10 days following the first.

in the dark

Q. Could you suggest a plant that I might grow in a dark, windowless bathroom? Do you recommend tea as a fertilizer (1 bag to 3 c. water) and how often?

E.B., Philadelphia, Pa.

A. No plant will grow in a dark, windowless bathroom. All plants require some degree of light in order to grow. Perhaps you would like to consult a book on fluorescent light gardening and give some thought to the idea as to whether or not such a unit could be installed in the bathroom.

I do not recommend using tea as a fertilizer. I find it best to use a water-soluble fertilizer for all my plants grown in containers, following the recommended dosage on the particular package.

holly cuttings

Q. I have two holly trees, one male and one female. I would like to make some cuttings. When would be the proper time and how can I do it?

L.W., Mt. Joy, Pa.

A. Cuttings may be taken from *Ilex opaca* from August until March. Usually the cuttings taken in late summer or early fall root better, but those taken in January and February can also be successful. Cuttings should be made from a tip growth of the current season's wood. Most of the leaves can be removed, and the cutting should be about 4-5 in. long with about four leaves at the top. The stem should be firm without too much give when bent.

I suggest that you use one of the rooting hormones, such as rootone or hormodin, dipping the cutting in the powder before inserting it into the rooting medium. The best rooting medium recommended for hollies is a 50-50 mixture of coarse sand and peat moss. Holly cuttings seem to require a relatively high temperature and in turn an ample amount of water. It is most important not to allow the cutting to dry out.

rust

Q. Can you tell me what is wrong with the enclosed azalea sample? It is a mollis (large flower) type and has bloomed wonderfully for 25 years, but this year it did not bloom. Note the yellow in the center.

G.S. H. Rydal, Pa.

A. The azalea specimen that you recently sent to me shows that the plant is suffering from rust. This disease causes the leaves to turn a golden brown color. The coloring is caused by the spores that break out from pustules on the underside of the leaves. These spores rapidly carry the disease from plant to plant.

To control the disease, spray the azaleas at 10-day intervals during July and August with two tblsp. of ferbam and two tblsp. of wettable sulphur per gallon of water.

ginkgo biloba

Q. Enclosed is a leaf from one of the trees in my neighborhood. No one seems to know what kind of tree it is. Can you identify it?

J.F.B., Philadelphia, Pa.

A. The tree that you are trying to identify is known botanically as *Ginkgo biloba*. It originated in eastern China; the sexes are separate and only the male trees make desirable street or specimen plants because the female trees produce a fruit which has an obnoxious odor when ripe.

The ginkgo is probably the most ancient of trees now alive. Geological records have proven that ginkgos grew on earth more than ten million years ago. Probably the most important fact about the ginkgo is that it is not attacked by insects or disease and therefore needs no spraying.

leaf spot

Q. My tree is infected with some sort of insect. I'm advised the tree is ash; see enclosed leaves. When should spraying be done and what type of spray do you recommend?

D.O., Havertown, Pa.

A. The specimen from your ash tree shows that the tree is suffering from one of the many leaf spot diseases that attack ash. The particular disease is a form of gloeosporium. I would suggest that you spray the tree with bordeaux, ferbam or zineb; be sure to follow the instructions on the package. The disease cannot be eliminated, but using one of the above-mentioned sprays will enable you to control it. The disease is usually not fatal to the tree.

These letters are samples from among those we receive throughout the year. If you have a question, please don't hesitate to contact me.

E.L.

WINTER-ACONITE

Before spring can be said to be really here, during warm spells in late February, and certainly in early March, there are many visitors to the Tyler Arboretum who come especially to see the snowdrops and winter-aconite in bloom. Indeed, in especially mild Januarys, these small flowers may be found, looking like very low buttercups.

Winter-aconite *(Eranthis)* is closely related to the buttercup, and both belong to the large and variable buttercup family, which contains such seemingly very different genera as *Clematis, Delphinium, Aquilegia* and *Thalictrum.* The genus *Eranthis* contains about half a dozen species, natives of Europe and Asia. The only one commonly grown in this country is *E. hyemalis,* and a lovely little thing it is. The flowers are borne singly on stems a mere three or four inches high. Under each flower is a lobed leaf, which surrounds the stem, and looks for all the world like a green Elizabethan ruff setting off the shining golden blossom. These flowers emit a strong scent of honey, and bees on their first flights revel in the nectar.

Since it blooms when the weather is so cool, winter-aconite stays in good condition for a long time. It only opens when the weather is bright. Freezing weather doesn't hurt it at all. And if it snows or rains, the flowers are tightly shut to protect their golden interiors, and open up as good as new when good weather comes again.

At Tyler, winter-aconite grows on a south-facing bank just below Lachford Hall. The exposure is perfect for early bloom. There are other patches on the level ground below, and these bloom a little later.



Winter-aconite photo by author

Gardeners often have difficulty establishing winter-aconite. The reason is probably the condition of the small tubers at planting time, for they are apt to be so dried and shriveled as to be almost lifeless when they go into the ground. They should be procured as early as possible in early autumn, and soaked for three days before planting. If the ground is dry at planting time, it should be well watered, and if the weather continues dry, water once or twice again. Once the plants take hold, watering is not needed.

The seed on winter-aconite is ripening toward the end of April, and by mid-May the foliage has browned and is easily cleaned away, or left to disintegrate where it is. It is needful, therefore, to grow the plants where they will not be destroyed by later gardening activities. They need sun from blooming time until late April; thereafter, they will be dormant for many months, and shade will not matter. So they can be planted around deciduous shrubs, under flowering trees such as dogwoods where grass mowing is not needed, and in deciduous woodland. Locations that are oriented to early spring sun will bring that longed-for first flower, but north-facing slopes will extend the blooming season.

There are several cultivars of winter-aconite that extend the flowering season. *E. x tubergeni* is a hybrid between *E. hyemalis* and *E. cilicica,* which blooms a little later and has foliage a little more finely cut. A good selection of this is 'Guinea Gold,' its color a little deeper, its foliage slightly bronzy. These hybrids are sterile.

The seed of *E. hyemalis* is fertile if it is sowed promptly, or allowed to fall where it will. The seed germinates in early spring, and in its first season of growth it makes only a pair of cotyledons—no true leaves—and a tiny tuber. In the second spring true leaves appear, but bloom is hardly likely to appear before the third or fourth spring. I like to take the seeds and simply toss them into a likely location, where they fall into the soft layer of decaying leaves—whatever leaves have fallen into that particular spot—and are washed down into the crannies where they will remain until the following spring.

When it is time to plant the soaked tubers, the gardener may wonder which side is the top. It is simply impossible to tell, and it doesn't matter. If the tuber is going to grow at all, it will grow even if it is upside down. As for depth, I have come to the conclusion that it, and many of the other small bulbs, corms and tubers can go deeper than we are accustomed to planting them. When I dig up winter-aconite, I find it under three or more inches of soil. Of course this means

THE
TYLER ARBORETUM
515 Painter Road • Lima • PA 19060
Lo 6-5431



Snowdrops and Winter-aconite.

photo courtesy of Tyler Arboretum

that drainage and a reasonably good soil must extend to a depth of at least six inches. In fact, one can hardly garden successfully with any less than this, and should properly have much more.

Those who have an interest in such things may be glad to know that the name *Eranthis,* from Greek, means "flower of spring," while *hyemalis* means "of the winter." The long season over which the flowers may appear makes this curious combination not inappropriate.

It has been treasured for a long time by devoted gardeners. Philip Miller wrote in his famous *Gardener's Dictionary* two centuries ago: "It flowers very early in the spring, which renders it worthy of a place in all curious gardens, especially as it requires but little room . . . [the] roots should be planted in small clusters, otherwise they will not make a good appearance."

It was also an old superstition that circling a garden with winter-aconite would protect it from scorpions, or so the 16th century herbalist Gerard would have us believe. However, scorpions are a pest we don't have to worry about. Now if it would give protection from slugs, that would really be a prime asset.

●

by Gertrude Wister

Gertrude S. Wister was assistant director of the Scott Foundation and the Tyler Arboretum. She graduated from the University of Wisconsin College of Agriculture where she majored in horticulture. She has been a garden consultant for years and has written a book, *Hardy Garden Bulbs* (Dutton, 1964).

FROM FIRST BLUSH TO FINAL SCARLET...



Katsura tree in the center behind bench

Question: What blushes delicately in spring, turns scarlet in fall, has one leg but can grow a dozen or more? Answer: the too little known katsura tree, *Cercidiphyllum japonicum,* which was introduced in America from Japan in 1878. The Chinese variety was not introduced until the early 20th century.

To come upon the katsura at the Morris Arboretum unawares, as one may because of its somewhat obscure location, is a breathtaking experience, like happening on an architectural gem in the winding streets of Florence. For Sir Sid, our nickname (and a handy mnemonic device) for the Arboretum's specimen, is imposing. About as tall as it is broad, its branch spread is some 80 ft., its girth at 2 ft. above the ground, a hefty 18 ft. The 12 trunks are each the size of a good tree. Some of the trunks sweep almost parallel to the ground, its habit in that regard being mindful of the European beech *(Fagus sylvatica),* but its bark, unlike the beech, is deeply furrowed, exfoliating on mature specimens.

Actually, katsura got its botanical name from the supposed resemblance of its leaves to the Judas tree, cercis. It is the only genus of the family Cercidiphyllaceae. Some writers note characteristics shared with the gingko. Like the gingko, its lineage is ancient, and both have the rather unique habit of putting out leaves and spurs directly from the trunk and branches. In China it has the same colloquial name as the gingko. Its common name, katsura, means wig in Japanese, but why it is

MORRIS ARBORETUM
9414 Meadowbrook Ave. • Phila. • PA 19118
Ch 7-5777

CERCIDIPHYLLUM IS A REGAL TREE

so named is unclear.

In marked contrast to the regal size of the tree is its foliage. The katsura has a rather small leaf, pink, almost transparent when it opens in spring, blue-green in summer, and a deep, bright yellow or scarlet in the fall. The leaves are opposite, essentially round, heart-shaped at the base and finely scalloped. They emerge early, which may cause one of Sir Sid's few problems, frost damage. But it is remarkably disease-free, fast-growing and long-lived. It is not reputed to tolerate drought, preferring a moist, deep loam, but the giant at Morris seems to have emerged unscathed from the years of drought in the 60's. While the katsura has insignificant flowers and fruit, the latter look like miniature clusters of bananas.

In Japan, the light yellow wood is used for furniture, wood carving and the interior finish of houses. The Japanese aborigines, the Ainos, use it for making canoes.

Perhaps we should clear up a possible confusion here. For those readers who may have a fastigious, vase-shaped tree on their property that they know as cercidiphyllum, it doubtless is. *C. japonicum* var. *sinense,* discovered in the remote mountains of western China, is usually single stemmed, very rarely found with two or three trunks, and taller. When young, Rehder notes, var. sinense is quite fastigiate.* Thus, one may occasionally find it used as a street tree. Two may be seen on the south side of Summit Street in Chestnut Hill, immediately beyond the service station that serves as port of entry to that historic street. The Morris also has a variety sinense, no longer columnar, but single stemmed, branching ruggedly at about 5 ft. above the ground. It may be found at the corner of the grounds at Hillcrest and Germantown Avenues.

In all aspects other than number of trunks, *C. japonicum* and *C. japonicum* var. *sinense* are remarkably similar, with botanists noting small differences in length of petiole and a slightly tomentose condition on the veins of the underside of the sinense leaf, while that of japonicum is glabrous. Rehder claims that japonicum is slightly more hardy (Zone IV) than var. sinense (Zone V). *C. japonicum,* unlike its Chinese relative which is restricted to one area of China, is found throughout all the islands of Japan. Charles Sprague Sargent, writing in 1894 after a plant exploration journey to Japan, comments that it is cercidiphyllum that gives "the forests of Yezo their peculiar appearance and character." Obviously, because of its spreading habit and great size, *Cercidiphyllum japonicum* is inappropriate for small properties. Variety sinense might well do for certain situations, but *C. japonicum* is best enjoyed in arboreta and on old estates.

Speaking of estates, a katsura larger even than the Morris specimen exists on the former Roberts estate in Penn Valley. John Swartley, the authority on big trees, claims, however, that the Morris tree is the finer specimen. Dr. John Fogg, former director of the Morris Arboretum, and now director of the Barnes Arboretum, did not recollect a larger one in the East. Mature specimens may also be seen at Tyler, Longwood Gardens, Westtown School as well as at Barnes. *C. japonicum* is a favorite in England, but is generally known there as a shrub. The average height of *C. japonicum* is 20 to 30 ft., but it may grow to 100 ft., while in China var. *sinense* is famous as that country's largest deciduous tree, attaining heights of up to 120 ft. So the Morris tree, at 80 to 90 ft., ranks with the large ones.

How did the Morris giant, listed with Dr. Swartley's 386 "Big Trees of Southeastern Pennsylvania," happen to come there? The romance of its discovery is commensurate with the tree itself. Dr. Hui-Lin Li, director of the Morris Arboretum, believes *C. japonicum* arrived at the Arnold Arboretum in 1878. Although Lydia and John Morris, who helped finance plant expeditions to the orient initiated by Sargent, did not build the manor house of Compton, their estate in Chestnut Hill, until 1887, it is probable that the cercidiphyllum was planted around the date of its arrival at Arnold. Compton was used as a summer home for some years before the Morrises moved there from Cedar Grove, the family seat on the Delaware. So Sir Sid was no doubt planted before Compton grew, and indeed outlasted it. The manor house was torn down several years ago, but Sir Sid remains.

For the unacquainted who have yet to see the katsura tree at the Morris Arboretum, go and look at the great sinewy roots twisting along the ground and the rugged baker's dozen of trunks providing a spectacular winter silhouette. Enjoy these pleasures more fully by recalling its exotic origins in the forests of the Orient. From any angle, cercidiphyllum is a tree worth knowing.

A spot check of local nurseries did not produce any cercidiphyllum, but the Brooklyn Botanical Gardens Handbook, *1200 Trees and Where to Buy Them,* lists a number of sources. It is also easily grown from seeds, cuttings or layerings.

●

by Ellen Van Pelt Wells

Ellen Van Pelt Wells was editor of *The Chestnut Hill Local,* a community newspaper, for 12 years. At present, she does volunteer public relations work for the Morris Arboretum. She is a part-time student of horticulture and landscape design at the Ambler Campus of Temple University.

*In *Trees for American Gardens,* Donald Wyman dismisses the difference as a matter of training cercidiphyllum to be single or multi-trunked, but most sources seem to agree that sinense is differentiated by its generally single trunk.

by Julie Morris



One of several walls built by Philadelphia artist Morris Berd on his property in Media. Note seat of slate back near the wall's curve.

MORE THAN PLANTS

Many of us are stuck with flower-bed thinking and don't know how to go about adding accents to our garden to bring the design together, to make the area more interesting and to show off our plants.

Few of us end up with the garden we first envisioned. Our ideas of design shift as taste and interest change. I have often thought that people who have a garden completely designed and planted before ever living in it miss a great deal.

The day-to-day differences in the garden area must be experienced: how the light filters through trees; how the pattern of a fence or line of a flower bed blends into the overall effect. Paths, resting places, pools, fountains, raised beds, and unexpected garden seats can all be part of the garden design that, in my opinion at least, should be added as we grow and change along with our plants. One of the gardens that brought this idea to mind was created by a local Philadelphia artist. His garden has taken 20 years to evolve. Set against a steep



photo by Edmund B. Gilchrist, Jr.

hillside, the beds are terraced, walls were built from stone hauled up from a nearby stream, and paths wander through the whole area. In addition to outstanding plant material, unusual conifers and rock garden plants, there are pleasant garden accents. Beach stones made into simple garden sculpture give dimension to a low wall. A garden seat of slate was built into the hillside to follow the line of the wall around a gentle curve. To add interest to the spot, which is a natural resting place at the top of an incline, a grass path gives way to an area of brick paving set in an eye-catching circular pattern.

Many of us are stuck with flowerbed thinking and don't know how to go about adding accents to our garden to bring the design together, to make the area more interesting and to show off our plants. A piece of paving with unusual texture, a small pool, grass steps, a garden fence, a trained vine and any number of ideas will help make your garden place more attractive. I know the owners of a small walled city garden who have hung plants and decorative iron grates from old-fashioned heat registers on the wall to create a charming spot in the tiny space.

Before hauling a lot of stone, digging endless holes or building miles of fence, look through some garden books just for ideas. When I first thought of writing about garden construction and decoration, I looked through the construction books and decided that they alone didn't give enough help. First we have to know that what we want really suits the purpose and will enhance the setting. Books such as *America's Great Private Gardens* by Stanley Schuler illustrate what has worked for others in the way of overall design. Other books deal with details, for example, the accents we are looking for, unusual pots, an oak bench, a paving made of wooden blocks, bold fence design, ironwork patterns, or paving stone set deep enough in turf to facilitate mowing.

In *Personal Gardening,* Josephine von Miklos worked accent ideas into her design chapters. Of garden furniture, she wrote, "Outdoor garden furniture, to be really appealing, should be permanent—not simply a plastic deck chair, but a sturdy bench or table that can take weatherbeating and eventually grow to become part of the landscape—at the very best it should

continued

resemble the nearby plantings in texture or color." Von Miklos covers walks, fences, walls and terraces and illustrates each with suggested plant materials.

Thomas D. Church's book, *Your Private Garden,* illustrates before and after garden changes, and offers many ideas for bringing the house and garden together through accents such as stairways. "Since stone is a natural complement for plants, their use in the stairway itself heightens the recall of a natural scene. . . Plants soften a stairway when used along each side. The texture of the foliage contrasts with the surface of stone and each is enhanced by the comparison."

One of the most beautifully illustrated books recently published on garden decoration is *Garden Decoration* edited by Peter Coats. It has photographs of gardens around the world. The book is divided into sections showing different aspects of garden accents. The chapter on gates alone is worthwhile and should conjure up lots of ideas. Trellises, walks, paths, steps, sculpture, topiary and fountains are covered. You will want to return to this book often for the pictures alone. If you're up to pavilions, follies, gazebos, pergolas or even loggias, Coats has those for you too!

"From the aesthetic point of view paving near the house is of great value. Though expensive to lay, once laid it asks for no upkeep and acts as a link between the house and the garden around it in a pleasing and logical way. A terrace extends to outdoors the ordered neatness of indoors." This quote from the Coats book is a good introduction to the most helpful book by John Brookes. His book, *Room Outside,* has been praised by many of our members, especially those who are professional designers. Brookes briefly traces the history of garden design and brings us up to the 20th century fact that the garden serves as extended living space. Not only are most types of garden construction and ornaments covered in the book but suggested plant material and its culture are given alongside the special design features. Both Coats and Brookes refer to earlier garden writers such as Vita Sackville-West and Gertrude Jekyll. Writing in the early part of this century the two women rarely failed to mention the importance of garden walls or the use of water in the garden's overall design. Jekyll's book, *Garden Ornaments,* is a magnificent reference with over a thousand photographs. Published in 1918 it is still a worthy guide.

"Garden ornaments today are slowly getting away from the classical influence. The feature needed in our modern garden has to be on a smaller scale to fit its smaller site. What it is made of, or what its subject-matter may be is unimportant; the primary considerations are that it pleases its owner and that in its final situation, grouped with the right plants against the right background, it gives pleasure the whole year-round, making a focal and culminating point in the outside room." With this statement Brookes helps us set the pace for choosing the right garden ornaments and decorations for our own use.

Recently a friend and I walked up a hill which was part of her garden. The path was not yet laid; the sound of water filled the area. She had installed several pools in surprise corners of the patio below us. More water splashed down a natural outcropping of stone to a pool below us. "This pleases me, it really pleases me," she said. And isn't that what gardening is really about anyway?

books

Homeowner's Complete Outdoor Building Book
John D. Brimer
Harper and Row, New York, 1971

Room Outside
John Brookes
Viking Press, New York, 1969

Your Private World
Thomas D. Church
Chronicle Books, San Francisco, 1969

The Forgotten Art of Building a Stone Wall
Curtis P. Fields
Yankee Magazine Issue
Dublin, New Hampshire, 1971

Garden Design Illustrated
John and Carol Grant
University of Washington Press, Seattle, 1954

Imaginative Small Gardens
Nancy Grasby
Heathside Press, New York, 1963

Garden Construction Work in Your Garden
R. I. Morgan
Blandford, London, 1972

The Education of a Gardener
Russell Page
Collins, London, 1962

Sunset Books
Lane Publishing Company
Menlo Park, California

How to Build Fences and Gates
How to Build Walks, Walls, and Patio Floors
Personal Gardening
Josephine von Miklos
Prentice-Hall, New Jersey, 1972

●

classified ads

MAKE MONEY by selling herbs at your spring fair. We will supply your choice of up to 35 varieties of healthy, vigorous herb plants in labeled peat pots. Supply limited. Call Ryder's Herb Farm, 609-429-7557.

Horticultural Pottery, Terra Cotta Fountains, Topiary Frames, Water Gardens. Custom designing in pottery and frames. Jean Salter, 767 Chester Creek Road, Chester, PA 19015. Call 874-2266.

Horticultural Consultant Service. I have a BS degree in Horticulture from Penn State, with a 30-year background in the field of Horticulture and general Landscaping. I can help solve any problems or go over your property and make recommendations that could prevent problems.

Naturalistic to formal settings, plants and plant problems, site preparation and grading problems. Consulting done on a fee basis. Hugh J. Peeling, P.O. Box 5, Concordville, PA 19331. Phone (215) GL 9-3192.

Polly Fairman's Indoor Bonsai Greenhouse and Japanese Gardens, 103 Mt. Lucas Road, Princeton, N.J. 08540. By appointment. 609-924-3202. Indoor Bonsai a specialty. Gifts for plant loving friends and relatives. Supplies, planters. Saturday morning workshops and clinics for all Bonsai problems. Grooming and boarding. Japanese landscaping. Lectures for garden clubs at Poly-En Gardens.

FOR SALE. Plants for house and greenhouse, including rare and hard to find varieties. Call TU 4-0497.

Wanted: Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd., Media, Pa. 19063. Telephone Ben Palmer, TR 2-7206.

Used and out-of-print books. Large selection includes horticulture, nature, travel, art, etc. Also special periodicals: Horticulture, Gourmet, Antiques, etc. The OWL, Morris and Yarrow, Bryn Mawr, PA (2 blocks north of Penn Central station). Tel: LA 5-6117. Hours: Tues. & Thurs. 1 - 6, Sat. 10 - 1.

WANTED. Gardener-caretaker, small estate, Wayne, PA. 5 days a week. State salary desired, recent references in first reply. Box 33, St. Davids, PA 19087.

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

drawings by author



Rhododendron mucronulatum

contrasts for winter garden beauty

by Russell O. Jones

Russell O. Jones became president of J. Franklin Styer Nurseries at the age of 30. He also edits a delightful quarterly called the *J. Franklin Styer Almanac,* for which he writes as well as supplies the pen and ink drawings. Jones is active in a small group of horticulturists in the Wilmington area. They call themselves "Cabbages and Kings." The group meets once a month to dine well and to discuss horticultural excellence. Jones studied landscape architecture at Pennsylvania State University.

During eight months of the year we admire our gardens, observing plants in flower, fruit, and foliage. I've noticed, however, that most people have little interest in what these plants look like, their color combinations and the pictures they create in the winter garden. I want to write here about three groups of plants that are hardy in our Delaware Valley, and which in combination create an interesting effect in the winter garden because of their attractive winter blooms, foliage colors or contrasting textures.

*

Rhododendron mucronulatum
(Korean rhododendron) with
Cornus mas (Cornelian cherry)

Due to the timing of their early bloom, Korean rhododendron and Cornelian cherry are a stunning combination and a lovely invitation to visit the garden in late winter. The pale yellow flowers of the Cornelian cherry are a delightful contrast to the pale lavender Korean rhododendron. Often they can be seen under a light dusting of winter snow, which gives a most beautiful effect.

To many, the Korean rhododendron is considered an azalea; however, it is one of the few deciduous rhododendrons. Brought to the United States from Korea in 1819, it would be my guess that nurserymen immediately planted it with Europe's only contribution to the dogwood family, *Cornus mas*—introduced about 1800 from England—because of the spectacular winter blooms that occur about the end of March or early April. Henry Francis DuPont used many of these plants to create such an effect at the Winterthur gardens, Centerville, Del.

Both plants are hardy to the northern New York border; thus they sur-

continued



Berberis gladwynessis, 'William Penn'

vive in our Delaware Valley climate. I would, however, like to point out that Korean rhododendron flowers can be killed by severe freezing temperatures; thus it is advisable to plant them on northern slopes or in winter shade so that the blooms won't force too soon. The *Cornus mas* on the other hand is very hardy, because the winter bloom is protected by four downy bracts when the temperatures are freezing, thus allowing an extended blooming period.

Because both plants are without foliage when in bloom, it is advisable to use them as border plantings with an evergreen backdrop such as hemlock or holly, and an evergreen underplanting to add design to the landscape.

These plants have other wonderful assets such as fall fruit on the Cornelian cherry and the bronze-crimson foliage on the Korean rhododendron. But most important, both are free of insects and disease and will survive in somewhat dry soils that are not strongly acid. Both plants are well known among nurserymen and if not available, can be ordered through nearby wholesalers.

*

Berberis gladwynensis 'William Penn' (William Penn barberry) with *Juniperus horizontalis wiltoni* (Wilton juniper)

An important characteristic of winter plants for winter gardens is foliage contrasts. William Penn barberry, discovered a few years ago at the Henry Foundation, and patented at J. Franklin Styer Nurseries, is an attractive winter-foliaged plant when used with Wilton juniper, one of the relatively new low-spreading junipers. (Cataloged at Monrovia Nurseries as "Wilton carpet" in 1956 but originally found in 1914 in the South Wilton Nurseries, South Wilton, Connecticut.)

William Penn barberry is a cross between *Berberis verruculosa* and *Berberris julianae,* a versatile evergreen for specimen or medium-sized ground cover. It is more hardy in our Delaware Valley than both its parents and is more vigorous. In the fall the foliage, which is small (about one inch long), turns to a bronze-red and persists on the plant until the new foliage appears in the spring. This winter foliage is striking when combined with the silver-blue needled foliage of the flat-growing Wilton juniper. These make sharp contrasts of texture and color when planted under white trunks of our native gray birch, thus making an excellent entrance or garden planting. Especially with a light snowfall these colors and textures are most effective.

The grouping of these plants is attractive the rest of the year as well as in midwinter. The contrasting texture of the broadleaf William Penn and the needled foliage of the Wiltoni is not the only bonus. William Penn has a small yellow flower borne in clusters in

May and the new foliage is a lustrous copper. Both of these contribute to the character of the plant grouping.

These plants will thrive in most locations. They will, however, prefer dry sandy soils, and do well on banks. Because of its relative newness William Penn is not yet available in all local garden centers, but should be in the near future. Wilton juniper is a standard plant in most garden centers or nurseries. Rarely do they have an insect or disease problem. Neither Wilton juniper nor William Penn barberry will thrive in wet locations.

*

Taxus baccata repandens (spreading English yew) and *Leucothoë axillaris* (drooping leucothoë) with *Ilex verticillata* (winterberry holly) or *Myrica pensylvanica* (northern bayberry)

Taxus baccata repandens, the hardiest of the *T. baccata* varieties, will do well in full sun or shade. Its most attractive asset is the lustrous, dark (almost black) evergreen foliage. Dwarf, wide-spreading and low-growing, it makes an excellent ground cover. The needled evergreen foliage contrasts nicely with broadleaf evergreens.

Leucothoë and English yew planted together in the garden create an interesting foliage texture throughout the year. However, they are most effective in the winter, because the leucothoë foliage turns maroon to crimson-red, producing a wonderful color combination. *Leucothoë axillaris* is the lowest of the leucothoë family and seldom reaches a height of over 18 in. It is hardy to -10 degrees and survives best in partial to full shade.

Leucothoë axillaris and *Taxus baccata repandens,* when planted together, should have upright plants to accent their horizontal effect. *Ilex verticillata* readily fills this need. Frequently it is called black alder or winterberry holly. It is indigenous to our native swamps, and deciduous. The bright red berries which it bears singly and in clusters along its gray-green branches remain until late winter when they turn black from severe frost and fall. Combined with the dark green of the English yew and the maroon-red of the leucothoë, winterberry holly adds color and dimension to the design.

Myrica pensylvanica, with its gray bark and waxy, blue-gray berries, will provide similar effects in the place of *Ilex verticillata.* Bayberry is rarely used today in the landscape and should be incorporated more often, not only for its berries but also because of its semi-evergreen foliage and its aroma.

Myrica pensylvanica (Bayberry)





Leucothoë

Both *Ilex verticillata* and *Myrica pensylvanica* grow to a height of about 9 ft. They are rarely used today in the garden because of their unusual scale and lack of evergreen foliage. However, they are easily purchased in our local nurseries. Correctly used, they can be a great asset in the winter garden and with a light snowfall in early winter, they are outstanding.

The pattern of garden beds becomes most prominent in winter; thus design and plant selection make these barren months interesting. What summer foliage hides often becomes a special beauty in the winter garden. When the light snow tips the branches of our garden shrubs their colors and textures become more evident, and invite one into our illuminated garden.

●



drawing by Evie Peck

Bobbie Breuninger graduated from the Pennsylvania School of Horticulture for Women in Ambler. Her interest in horticulture continued in her 9 ft. x 11 ft. lean-to greenhouse where she grows a wide variety of plants with emphasis on bulbs.

pentas lanceolata

Colorful blooms during the winter months are a joy to the greenhouse gardener. One plant that gives me much satisfaction is the *Pentas lanceolata.* Commonly called Egyptian star-cluster, it is a reliable flowering plant, blooming almost continuously. As a cut flower, it is airy and charming. In the greenhouse it grows approximately 12 to 14 in. It is virtually disease-free.

Pentas came into my greenhouse five years ago and found a permanent home. It has clusters of small, long-pointed tubular, five-pointed flowers in red, pink or white. The leaves are bright green, soft and slightly hairy. It branches constantly, the new shoots forming when a terminal cluster fades. The new shoots begin to form buds immediately. Because of its rapid growth, the plants need to be cut back whenever they exceed their bounds.

The plants enjoy a bright, sunny spot with a nighttime temperature of 50 to 60 degrees. A growing medium of equal parts of garden loam, peatmoss and sand will suit their needs. They should be kept evenly moist.

Propagate new plants by taking cuttings of side-shoots, without blossoms in April, rooting them in moist vermiculite in high humidity at 70 degrees. These will make vigorous plants for bloom during the winter. However, pentas does not seem to mind being propagated at any time of the year.

The plants may be set out into the garden during the summer in full sun or partial shade where they will make a fine display and continue to provide cut flowers all summer.

Bobbie Breuninger

gymnocalycium mihanovichi friedericki

Cacti in bloom in Philadelphia? Certainly. Furthermore it can be done without a greenhouse. I have had more than 30 varieties of cacti in bloom over the past few years, all without benefit of a greenhouse.

Some of the cacti have large, dazzlingly beautiful flowers that last but a day. Others have smaller but longer-lasting flowers of great delicacy and subtle color. Some bloom only one or two days a year, others over a period of many weeks.

The pink chin cactus, *Gymnocalycium mihanovichi friedericki,* combines many outstanding qualities. The plant body, about 2½ to 3 in. across, is an attractive reddish color. The flowers, up to 1½ in., are a beautiful shell pink and are produced one, two or three at a time from late June until October.

Requirements are simple. A mix of 1/3 ordinary garden soil, 1/3 coarse builder's sand and 1/3 leaf mold or compost does very well. A quarter-teaspoon of bonemeal per pot is added. The plant grows well alone in small pots or in groups, in larger pots or in bonsai dishes perhaps landscaped with other cacti. I prefer nonporous containers because they require less frequent watering. The cactus should dry out a bit between waterings and drainage must be good.

My pink chin cacti are kept in the cellar under 14 hours of standard Gro-Lux light per day from mid-October to mid-May. Cellar temperature varies from about 55 to 62 degrees. During that time a light watering, about two to three teaspoons per plant, is given every 10 days to two weeks. From mid-May to October they are kept on an outdoor table with a fiberglass panel as a rainshed and are watered generously about every five days—enough water so that it runs right out the bottom of the pot. Once every four weeks in summer they are fed with 1/3 strength African violet food or any other low nitrogen, soluble plant food.

They are available from cactus nurseries or, if you are patient, can be raised from seed. Bloom occurs on the third or fourth summer.

If you go away for vacation they will get by with no water at all for



Gymnocalycium fredericki: Center, in flower; front right, in bud; extreme left and off-center left, without bud or bloom.

Henry F. Lee is an associate professor of pediatrics at the University of Pennsylvania and an actively practicing physician. He says growing cactus and other succulents is a good hobby for a busy person. He has experimented with their culture under artificial and natural light for several years. Success has followed with many varieties usually considered difficult to grow. Plants raised from seed now support his hobby.

three weeks or more, but it may temporarily interrupt blooming. In nature the gymnocalyciums occur in relatively dry meadows rather than the severe deserts.

Henry F. Lee

cyperus alternifolius

Ten years ago I bought a 6-in. *Cyperus alternifolius* (umbrella plant). It was half-dead, and heaven only knows why I wanted it. Perhaps even in its beleagured condition it hinted at an elegance. So I was challenged. Today it has many stems and some stand 4 ft. tall.

C. alternifolius has long, narrow, grass-like leaves that are produced at the tops of slender stems. They radiate in graceful curves like the ribs of an umbrella. *C. alternifolius* requires so much water that I keep mine submerged within a large ceramic bowl. In winter it sits on the floor in my dining room by a window with a southern exposure. On a sunny day the shadow that this beautiful, graceful plant throws on the wall is breathtaking. I am not the only one who loves the cyperus. My blue parakeet, who is allowed to leave his cage, can hardly wait until September at which time I bring it in from its semishade position in my garden. Then he will perch on a stem that bends and bounces from his weight while he nibbles in a straight line along a leaf. He used to be chased from this pastime until I realized he was pruning and thereby stimulating new growth.

I knew that I would have to share my cyperus, so I learned to propagate it. In summers past it dropped its seeds between the bricks in my garden from which grew many new plants. I also propagate by cutting off a leaf, leaving about an inch of stem. Because the leaves are broad, I also trim off about an inch at each tip all the way around. The stem is then put into vermiculite, with the leaf standing open over it, umbrella-fashion. I give away the new plants and so begin its immortality.

Eleanor Laden



Eleanor Laden and Milton, her husband, have built a small city garden at their west Mt. Airy home. Its many exposures have encouraged nooks, housing among other things a wildflower and a fern garden. At present, they are planning a rock garden that will expand upward since it can't spread out. Mrs. Laden's sculpting has enhanced her sense of garden design.

geranium — mrs. henry cox

I am fond of all geraniums and have favorites in each group; however, if I could have only one geranium I would select Mrs. Henry Cox, a brilliant tricolor.

For a geranium, Mrs. Cox is considered a medium sized plant. It has velvety, medium green leaves with a narrow yellow border and the brown zone is splashed with scarlet and crimson. The foliage is gay and colorful throughout the year, even during the dull months of winter. As an added bonus it produces small, single, pale salmon flowers. As the days lengthen and the sun becomes stronger, the foliage becomes more colorful and more flower buds are formed.

Mrs. Cox is a rather fast-growing plant and tends to become tall and leggy unless pruned.

Geraniums prefer cool nights, 50 to 65 degrees, and warm, sunshiny days with good light. They can be successfully grown in the home at a south or southeast window. Be sure to turn the plants regularly for even plant growth. I keep a 55 degree night temperature in my greenhouse and find geraniums one of the best plants to grow with the least problems.

Geraniums need ample air circulation and should not be crowded. Crowding causes yellowing of foliage and the plants become too tall and spindly and diseases may appear. They prefer soil moist but not exceedingly wet. Soil that is too wet or heavy may cause root rotting.

The past summer I lost many of my special geraniums because our area was flooded. The plants in a special bed outdoors were under deep water several times causing root rotting. I was very distressed; however, since I can't resist propagating, I have cuttings and young plants are going year-round. Fortunately, I have offspring of many of my favorites.

Doris M. Kaufman



Doris M. Kaufman is a greenhouse and outdoor gardener. Mrs. Kaufman and her husband received blue ribbons for their botanical collections in the 1972 and 1973 Philadelphia Flower & Garden Show, as well as the 1973 Meadowbrook Farm silver trophy for the best windowsill collection. In addition, they received a blue ribbon for their shade window in the 1972 Show and their sunny window in the 1973 Show.



THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Succession of Bloom in the 18th Century Garden at PHS

MARCH • APRIL • 1974

$1.00





16



26



3



8



12

THE
green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 4 Mar., Apr., 1974

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*President*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Charlotte L. Archer
M. M. Brubaker
Frederic W. Clark
George M. Harding
Nancy Howard
Craig S. Oliver
Ralph M. Sargent

DESIGNER
Charles Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 4, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1974

in this issue

1 Guest Editorial *by J. Franklin Styer*

3 Succession of Bloom in the PHS 18th Century Garden *by Martha Ludes Garra*

7 A Not So Technical Glossary of Terms

8 Perennials for Pleasure

12 Rub-A-Dub-Dub, Some Zucchini in a Tub *by M. M. Brubaker*

15 Digging for Information *by Ed Lindemann*

16 Azaleas in the Delaware Valley *by Franklin H. West*

22 The Morris Arboretum: When All Else Fails Hamamelis Blooms *by Ellen V. P. Wells*

24 The Tyler Arboretum: Mahonia Bealei *by Gertrude S. Wister*

26 Drawing Out the Jeffersonia *by Doretta Klaber*

29 Books and the Green World: Garden Art from Far Away Places *by Julie Morris*

30 Classified Advertising

31 Growing Interests

Front and back cover photos by Edmund B. Gilchrist, Jr.

By Any Other Name –

guest editorial

Behind the scenes at the Flower and Garden Show people take a lot of trouble to maintain good nomenclature. Exhibitors, judges and men and women on various committees sharpen their pencils, consult the dictionaries and write correct labels for the thousands of plants in the Show. The gardening public gains in this annual effort to guard name stability.

But this is only the visible tip of an iceberg of scientific work scarcely suspected by the gardening public. Until recently nomenclature was the product of a great number of taxonomists, each working absolutely alone. Controversy was often bitter and protracted; there being no authoritative body to arbitrate these matters, many were never really settled. Stability is only now beginning to come within reach in the taxonomic field.

Now, as the discovery of new species in the temperate zones ends, a whole new field of nomenclature is produced in economic plants. Horticulture, forestry and agriculture can, if they choose, by-pass the species and create a great population of distinctive varieties or cultivars. These are "sub-specific" in scientific rank, but must be recorded, described, and fully identified just as species should have been.

While the body of varieties has grown until it outnumbers the known species of woody plants, the purely botanical taxonomists have generally ignored it. It was left to the much smaller number of scientists attached to the arboretums of the world to record and classify the material.

This small group of men and women was fortunate to have an advocate among the official botanical organizations, our own Dr. Wendell H. Camp of the Academy of Natural Sciences in Philadelphia. He steered through the botanical hierarchy a plan for a separate Horticultural Code of Nomenclature, which led to regular international congresses and a permanent controlling body, now headquartered in the Netherlands.

This machinery, now independent of botany, is putting order into the naming, describing, and listing of varieties. The term "horticultural variety" is legally shortened to "cultivar," and this nomenclatural field is divided into numerous parts, such as roses, lilies, orchids. Each group is supervised by an International Registration Authority which maintains the official list for its group and registers all new cultivars.

Cultivar names are distinguished from Latin specific names: they are written in English as opposed to Latin and capitalized, for example, the maple *(Acer rubrum)* 'October Glory,' or the rose 'Peace.'

Naming, describing and listing cultivars promise to bring further accuracy and stability in identifying our plant material. It can become the basis for stopping fraud, deceit, mislabeling, bad naming, and extravagant claims of most kinds. It means the courts can have authoritative evidence against the improper promotions that have been common. It also means that information on new plant material can be quickly disseminated worldwide. Our catalogs will become more dependable and plants from all lands will become available.

One small nomenclatural wrinkle remains to be ironed out. The pure botanists are still busy changing Latin names as they see fit. Some of these changes are necessary, for example, when two distinct names are in use for one species, or two species have one and the same name. Some, however, are capricious; for example, *Quercus rubra* was changed to *Quercus borealis maxima,* then 40 years later back to *Quercus rubra.*

There is a movement afoot, by which the international commissions in horticulture, forestry and agriculture, acting in the best interests of the public, are planning to review all proposed specific name changes in the genera of economic plants or cultivars. Such a review would require several years for study of the proposal, while horticulture would continue to use the old name. Final recommendations would then be made and carefully explained. If the changes were approved the entire world would adopt them simultaneously; if they were rejected they would probably be rejected by botany also, because the argument for rejection was based on good authority. If botany should adopt the changes in spite of the argument, there would be a two-name system for the species, with which the scientific world could live comfortably enough.

The practice of protecting the world against expensive and unnecessary nomenclatural manipulation would be called stabilization. Compared to the present method, under which some changes are hardly put into common use before they are again changed, stabilization would be a major improvement.

Stabilization is needed because environmental science is now under pressure to produce better land cover, better lumber, better paper, better trees to protect land, water and air, and of course, better food plants. We can ill afford to confuse these practical developments by incorrectly identifying the basic breeding stocks.

●



by J. Franklin Styer

J. Franklin Styer, a member of the Society's Council, is chairman of the Nomenclature Committee of the American Association of Nurserymen, a position he has held since 1950. He has been in the nursery business 49 years.

Dr. Styer received the Ph.D. degree from the University of Pennsylvania in 1930. He was the pioneer researcher in mushroom physiology and culture, which was appropriate since his father Jacob J. Styer was the original builder of the mushroom industry in this country.

In 1946 he was associated with Robert Pyle in organizing the American Horticultural Council (now the American Horticultural Society) and was its secretary several years. He then collaborated with Wendell H. Camp in preparing the Code of Nomenclature for Horticulture, which became the cause for establishing the International Horticultural Congresses.



Succession of Bloom in the PHS 18th Century Garden

by Martha Ludes Garra

Each year thousands of people, many of them visitors to Philadelphia, pass by the garden beside the headquarters of the Pennsylvania Horticultural Society on Walnut Street. It is a garden that reflects the life-style of a prosperous Philadelphian of the mid-18th century.

The design of the garden offers year-round interest but we realize that to most of our visitors a garden means flowers, and that many of them will see our garden only once. So for their pleasure and inspiration we try to have as much flower color as we can. To do so requires careful planning and the use of the garden technique known as "succession planting." It also requires careful, dedicated maintenance to keep it in mint condition.

Not all of those who enjoy our garden are visitors to the city. Many people live or work in this area and so pass by often and for them spring comes to Old Philadelphia when the first plants are set out in our 18th century garden. From that day on for the next seven months the different kinds of flowers in the garden follow each other in a rhythmic succession of bloom, each one contributing its own special color and texture to carry out a design that has been carefully thought out in advance. A study of the accompanying plans will show how these colors and textures have been related to each other. Although only two successions are shown in the illustration on page 4, actually there are six different changes of scene as the planting schedule outlines. Space did not permit all the plans to be shown.

The first planting of pansies, wallflowers and forget-me-nots will be set out as early as the weather permits. In 1974 we are hoping to devise some sort of cover for the beds to protect them from the heavy rains of early spring. If we can get the soil reasonably dry we believe that we can get the first planting in perhaps as much as two weeks earlier than we have been able to do in the past.

The color scheme for the first planting will be gay since the only pastel note will be the primrose yellow wallflower in two of the four center beds. The pansies, wallflowers and forget-me-nots will provide instant color because the plants will be in bloom when they are set out. In past years when we were able to have tulips, the only early color came from the pansies planted as borders around the beds of tulips; it seemed such a long wait for the brave display of tulips to begin in early May. With the new succession we will have good color in the whole garden for at least five or six weeks in early spring.

In the earliest planting the tallest plants are placed in the four center beds. In the next succession the height shifts to the outside beds with the tallest of all being in the corners. Later plantings return the height to the center beds.

continued on page 6

Plants chosen for the succession of bloom may change from year to year. This photo and the one on the cover were taken in late summer 1973. Begonias and geraniums were the mainstay of the planting into the fall. In late summer 1974, the varieties will be changed to create a new color scheme.

PLANTING SCHEDULE

1st planting -- set out all early biennials (see plan below) as early as weather permits.

2nd planting – approximately May 1st: replace Raspberry Rose Pansy with Foxglove
replace Bright Blue Pansy with Canterbury Bells

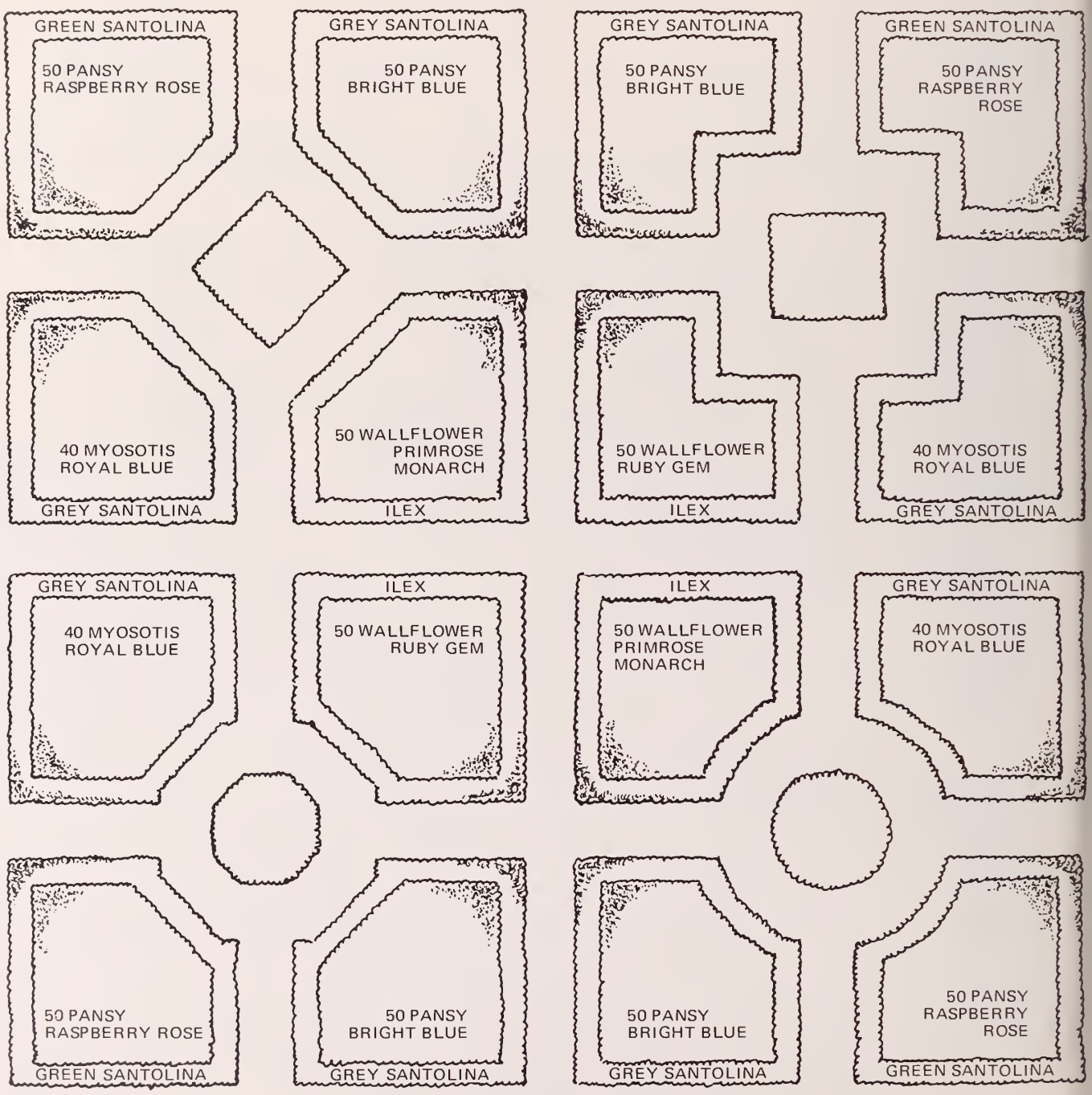
3rd planting – approximately May 10th: replace Wallflowers with Geraniums and Myosotis with Sweet William
plant all borders: Ageratum, Basil, Coleus

4th planting – approximately June 7th: replace Foxglove with Begonia

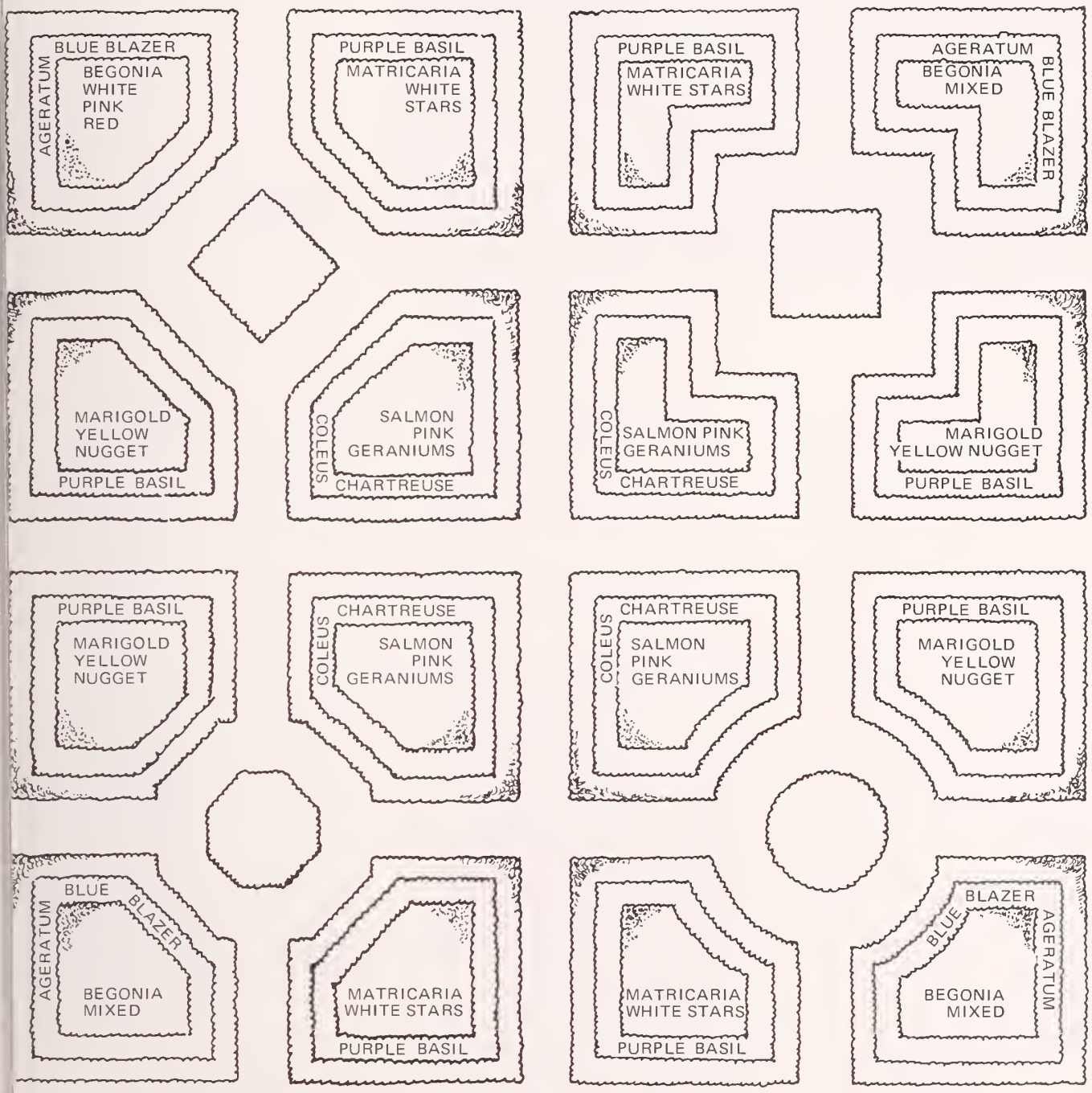
5th planting – end of June: replace Canterbury Bells with Matricaria and Sweet William

6th planting – early September: replant half of garden with Chrysanthemums

PLAN FOR EARLY SPRING



PLAN FOR SUMMER



Martha Ludes Garra, July 1973

continued



Plants selected for the 18th century garden are not unduly affected by city pollutants.

The second planting will be made about May 1st when the 'Raspberry Rose' pansies in the four corner beds will be replaced by primrose yellow foxgloves of the improved 'Excelsior' strain which has the flowers all around the stem rather than only on one side. The blue pansies will be replaced by single Canterbury bells in white, pink and blue.

The wallflowers and forget-me-nots will stay in place until about May 10th when salmon pink geraniums will replace the wallflowers in the four center beds and sweet William will replace the forget-me-nots. We have decided to use two varieties of sweet William which we feel deserve to be better known: 'Morello' a brilliant dark crimson flower with dark foliage and 'Nigricans,' which also has dark foliage and flowers of such a dark rich red as to be almost black. With them we will use a few salmon pink flowers for contrast and to pick up the color of the geraniums in the adjoining beds. The danger of frost will be over by this date so we will also plant all the borders for the summer succession, i.e., ageratum 'Blue Blazer,' coleus 'Chantreuse' and the purple-leaved basil 'Dark Opal.' These borders and the geraniums will carry on the show of color until the "big three" of the biennials come into bloom.

The foxgloves will be the earliest of these to bloom and will be past their prime before their two companions. So about June 7th they will be replaced with the summer succession of *Begonia rex* in mixed colors of white, pink and rose. The Canterbury bells and the sweet William will carry on to the end of June when the final summer succession will be set out, matricaria 'White Stans' replacing the bells and marigold 'Yellow Nugget' replacing the sweet William.

In early September chrysanthemums will replace the plants in half of the beds; just which half will depend upon how the plants behaved during the summer. It is sometimes surprising how differently the same plants will grow and bloom from season to season depending on the weather.

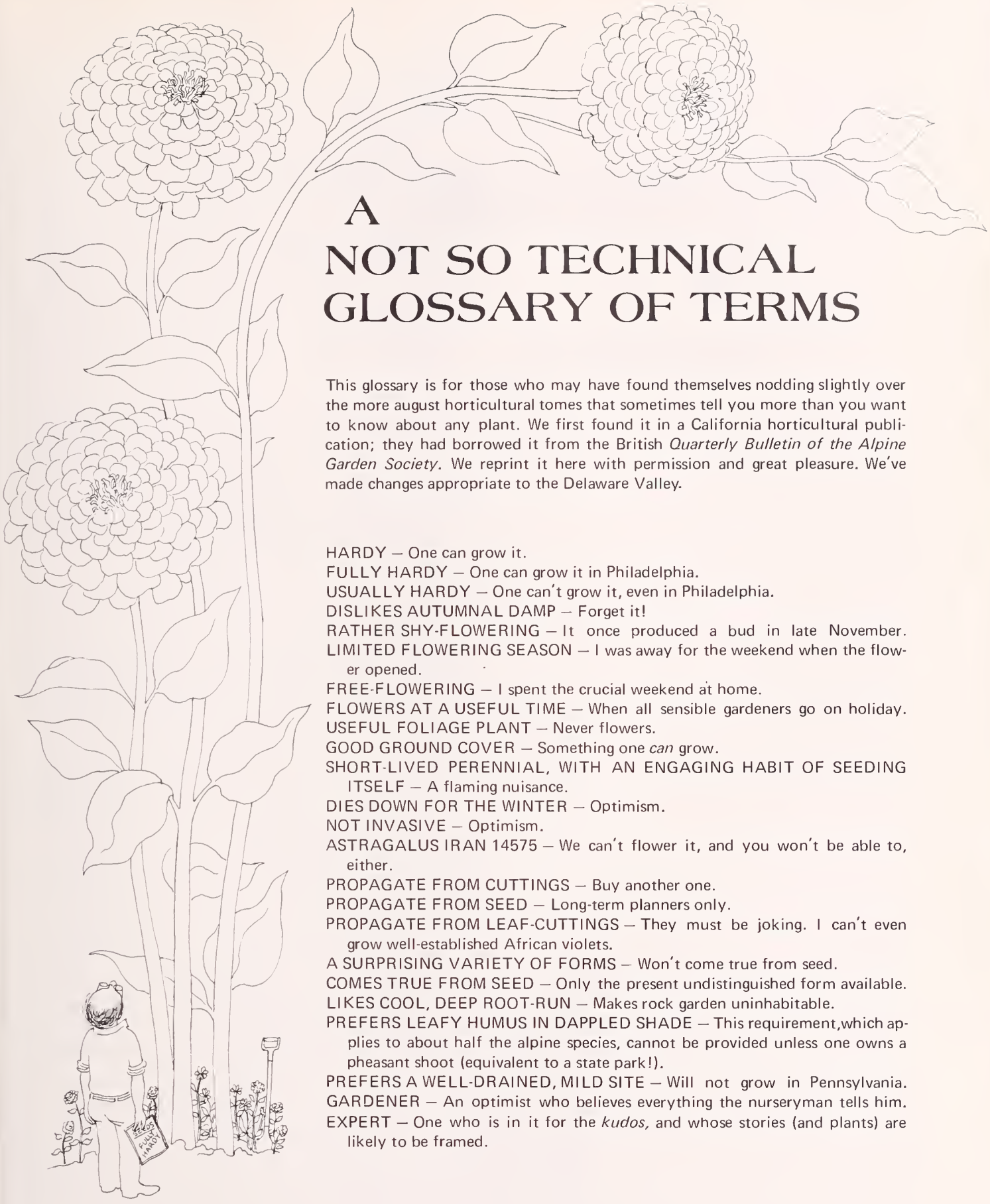
You will notice how many biennials have been used in planting this garden. All of the first and second plantings are biennials, as is part of the third. We hope that many gardeners will realize how valuable this group of plants really is by seeing the effects we get from them in our garden.

The coleus and the basil are used for their foliage color alone and are not allowed to bloom. We have placed the chartreuse color of the coleus as a strong contrast to the almost black green of the ilex and the purple of the basil is staged next to the silver gray of the santolina.

In early spring and again in summer all the beds are filled with bloom at the same time. For the other weeks the successions outlined here provide color in at least half of the beds while we wait for the other half to come into bloom. At the end of the growing season, when the last of the blooming plants are removed, there still remains color and texture. The gray and the green of the santolina and the dark green of the ilex are staged against the rich brown of the earth, that earth which holds within itself the promise of another year when spring will come again to our 18th century garden.

●

Martha Ludes Garra designs and coordinates the succession of bloom for the PHS 18th century garden.



A NOT SO TECHNICAL GLOSSARY OF TERMS

This glossary is for those who may have found themselves nodding slightly over the more august horticultural tomes that sometimes tell you more than you want to know about any plant. We first found it in a California horticultural publication; they had borrowed it from the British *Quarterly Bulletin of the Alpine Garden Society*. We reprint it here with permission and great pleasure. We've made changes appropriate to the Delaware Valley.

HARDY – One can grow it.
FULLY HARDY – One can grow it in Philadelphia.
USUALLY HARDY – One can't grow it, even in Philadelphia.
DISLIKES AUTUMNAL DAMP – Forget it!
RATHER SHY-FLOWERING – It once produced a bud in late November.
LIMITED FLOWERING SEASON – I was away for the weekend when the flower opened.
FREE-FLOWERING – I spent the crucial weekend at home.
FLOWERS AT A USEFUL TIME – When all sensible gardeners go on holiday.
USEFUL FOLIAGE PLANT – Never flowers.
GOOD GROUND COVER – Something one *can* grow.
SHORT-LIVED PERENNIAL, WITH AN ENGAGING HABIT OF SEEDING ITSELF – A flaming nuisance.
DIES DOWN FOR THE WINTER – Optimism.
NOT INVASIVE – Optimism.
ASTRAGALUS IRAN 14575 – We can't flower it, and you won't be able to, either.
PROPAGATE FROM CUTTINGS – Buy another one.
PROPAGATE FROM SEED – Long-term planners only.
PROPAGATE FROM LEAF-CUTTINGS – They must be joking. I can't even grow well-established African violets.
A SURPRISING VARIETY OF FORMS – Won't come true from seed.
COMES TRUE FROM SEED – Only the present undistinguished form available.
LIKES COOL, DEEP ROOT-RUN – Makes rock garden uninhabitable.
PREFERS LEAFY HUMUS IN DAPPLED SHADE – This requirement,which applies to about half the alpine species, cannot be provided unless one owns a pheasant shoot (equivalent to a state park!).
PREFERS A WELL-DRAINED, MILD SITE – Will not grow in Pennsylvania.
GARDENER – An optimist who believes everything the nurseryman tells him.
EXPERT – One who is in it for the *kudos,* and whose stories (and plants) are likely to be framed.

Perennials for Pleasure

Perennials are apt to be a problem for modern gardeners. They are highly recommended by knowledgeable horticulturists who extol the many species and cultivars with distinctive shapes and colors. Yet only a few are to be found at most nurseries, and far too often these produce unsatisfactory results in the home garden.

The explanation for this unhappy situation is the classic vicious cycle. Most perennials require a season of growth before they look their best. They should be planted months before they are expected to produce flowers. The gardener should buy them in a dormant condition, selecting and placing them on the basis of how they will look weeks or months later—not how they happen to look at the time of purchase. In short, perennials require planning.

But many gardeners refuse to plan. They wait for a nice spring weekend and then attempt to buy a border ready-made at the nearest roadside stand. They pick up petunias and pansies by the flat and they expect to buy perennials in the same fashion. The proprietors of these stands are scarcely to be criticized when they yield to the gardener's demands and offer the few varieties that can be sold in flower—spring blooming phlox, iberis, nepeta and the like. From the seller's point of view it is sound business to offer material for which there is a sure sale and which will give a more or less immediate effect. The trouble is that this method of selling and buying perennials defies all the rules of good gardening and limits the selection to a very few fast growing profitable varieties, dooming a large number of desirable species to extinction.

Fortunately both seeds and stock of some of the less popular varieties are still available for gardeners who will take the time to plan and plant ahead, and there are still nurseries who will grow these plants on special order. Of course, perennials require care. Despite the name, only a very few can be put in place and left alone. Many need dividing every year or every two years. Few are free of pests and disease, and some of the nicest are not completely hardy in this climate. Nevertheless, the results are worth the trouble.

The following list has been compiled by experts in the Delaware Valley. It is not by any means complete, but is presented here with the recommendation that our members investigate the possibility of using some of these plants in their gardens. All are desirable and worth the expense and labor required to grow them. If small plants are ordered this year and planted in the garden in the spring or in the early fall, next year may bring a border of which the gardener can be justly proud.

The Society staff is prepared to answer members' questions about these and other worthwhile herbaceous plants and to recommend sources of supply.*

Achillea taygetea (Yarrow). Neat habit. Soft yellow flowers on 18" stems from June to August. Full sun.

Aconitum carmichaeli (fischeri) (Monkshood). 2½' - 3' dark blue flowers in late summer and early fall. Will grow in light shade.

Alyssum saxatile cv. Silver Queen or *A. saxatile* cv. Citrinum. These low growing plants with soft yellow flowers are identical. Bloom in May.

Amsonia. Seldom grown perennials giving blue flowers in May. Will grow in sun or light shade.

A. montana 12" - 15".

A. tabernaemontana 2½' - 3'. Pale blue flowers.

Anemone japonica (Japanese anemone). 2' - 3', large pastel flowers from September to November. Will grow in light shade. cv. Queen Charlotte, pink, and cv. Marie Manchard, white, both semi-double.

Anemone pulsatilla (Pasque-Flower). 8" - 10" delicate lavender flowers in spring. Full sun and good drainage required.

Aquilegia (columbine). Will grow in light shade or full sun. Flowers in May or June.

cv. Helenae 15" blue and white flowers.

flabellata nana 6" - 8", drawf, white, blue-gray foliage.

McKana's giant hybrids. Tall, mixed colors.

Astilbe X arendsi. 2' - 3' feathery flowering spikes in June. Will grow in sun or shade.

cv. Bonn — light pink; cv. Fanal — dark red; cv. Irrlicht — strong white; cv. Deutschland — pure white.

Aster X frikarti cv. Wonder of Staffa. One of the longest blooming perennials with blue daisy-like flowers from July to frost. 30" tall. Will grow in light shade, but best in full sun.

continued

*Sources for perennials are also listed in the *Hardy Plant Finder,* on sale at the front desk at PHS, or in the PHS Library.



Campanula persicifolia

drawings by Doretta Klaber



Anemone japonica

Baptisia bracteata. 1½′ high, soft yellow flowers in summer. Sun.

Campanula persicifolia cv. Telham Beauty. Slender growth to 3′ with 3″ pale blue bells in June. Grow in sun or light shade.

Cimicifuga simplex cv. Armleuchter. Slender 3′ flowering spikes produced in abundance in October. Prefers shade.

Dicentra eximia and its hybrids. (Fringed bleeding heart.) Provides bloom over a long period. Will grow in partial shade.

Dictamnus albus (gas plant). 3′, white, late spring blooms. Once established will grow for years. Sun or shade.

Epimedium X youngianum var. niveum. 12″, white flowers in May, distinctive foliage. Partial shade.

Filipendula hexapetala var. flore-plena. 15″ high clusters of flowers in June, pink in bud, white when open. Foliage, low fern-like rosettes. Sun or partial shade.

Helleborus orientalis (Lenten rose). 12″ high, shades from ivory through mauve and rose through wine. Very early bloomer. Handsome foliage. Partial shade.

Hibiscus. Super giant 3′ to 6′, large flowers in shades of red, pink and white. Full sun.

Lythrum virgatum cv. Morden Pink. 3′ - 4′, spiked pink flowers June to September. Vigorous. Sun.

Linum narbonnense (Blue flax). Lacy foliage and delicate pale blue flowers from late May through the summer. Sun. (Superior to usually grown *L. perenne.*)

Kniphofia uvaria (Tritoma) (Torch-lily). Flower stalks 3′ - 4′, brilliant orange-red. August and September blooming. Newer small-flowered cultivars 'Coral Sea' (coral) 'Vanilla' (light yellow) bloom in June. Full sun.

Penstemon barbatus cv. 'Rose Elf'. 2½′ tall with bright rose pink trumpet-like bells on slender stalks in June and July. Sun.

Phlox suffruticosa 'Miss Lingard.' 2½′ to 3′ tall, white flowers, dark green foliage. First summer phlox to bloom, and least susceptible to disease. Full sun.

Platycodon grandiflorum (Balloon flower). Open bells of blue or white on 3′ stalks from late June to September. Plants are slow to develop but when mature are outstanding. Sun or partial shade in well-drained soil. The variety *mariesi* is only 12″ to 18″ high. The tall one is a beauty and I feel should not be left out.

Salvia X superba (S. nemorosa). Tall 3′ flowers, purple-blue with red bracts in June and early July. If cut back severely after flowering will bloom again in September. Full sun.

Scabiosa caucasica cv. Blue Lady. 2′, beautiful lavender-blue flowers, June to September. cv. Constancy, amethyst flowers. Full sun. Likes lime.

Sedum telephium 'Indian Chief.' Typical grey-green sedum foliage but the flowers on 2′ stalks are in broad heads that change in color from ivory through pink and rose to mahogany over a period of many weeks in August and September giving a long period of bloom. Sun.

Stokesia laevis (Stoke's aster). 12″ - 24″ high, huge blue or white flowers in July and August. Full sun. Recommended: cv. Silver Moon and cv. Blue Danube.

Thalictrum rochebrunianum cv. Lavender Mist. Maidenhair-like foliage, lavender flowers with yellow stamens on stalks 4′ - 5′ tall in August. Sun.

Thalictrum rugosum (T. glaucum). Handsome silver-grey foliage effective all summer. Clouds of soft yellow flowers on 4′ - 5′ stalks in June. Sun or light shade.

Thermopsis caroliniana. Tall with yellow lupine-like flowers in June. Full sun.

Verbascum X Yellow Queen. Not to be confused with biennial forms. 4′ tall with stalks of pale yellow flowers in June and early July.

Veronica (Speedwell). Many are desirable. Flowers appear in spikes of blue, white, pink and lavender from June through August. Especially recommended are *V. spuria, (V. amethystina)* 'Royal Blue,' and *V. longifolia* (maritima) var. *subsessilis.*

Viola cornuta 'Royal Purple.' Vigorous plant with purple flowers on 12″ stems. Partial shade. Spring flowering.

Viola odorata 'Rosina' (Sweet Violet). Blooms in spring and often again in late summer. Pink flowers. Shade.

●



Viola odorata rosina



RUB-A-DUB-DUB

SOME ZUCCHINI IN A TUB

by M. M. Brubaker

M. M. Brubaker has grown enough zucchini squash in containers over the last three years to supply his own household as well as friends, neighbors and, yes, indirectly The Sunday Breakfast Mission with goodly-sized meals of the tasty vegetable. He raises cucumbers and tomatoes in containers, but he can't be made to comment on his successes since he is a scientist and insists that "more extensive field work has to be done before I can report on my results."

When he retired from Dupont, Brubaker was assistant director of the Central Research Department. By the time he left, patents had been granted in his name in the field of insecticides, photography, nylon, fluorocarbon polymers, ethylene polymers, paints, varnishes, lacquer, coated fabrics and cellophane among other things.



drawing by Julie Baxendell
photos by author

A number of large vegetables can be grown conveniently in tubs. The tub culture has many advantages. It should be of most interest to those with no garden space, but I grow some vegetables in tubs even though I have about 750 square meters (8000 sq. ft.) of plowed garden.

Portability is an obvious advantage of tub culture. For example, zucchini squash can be planted early in the spring, grown in the sun outside during warm days, and brought indoors for the warmth it needs at night. As a result we can start eating the squash from tubs in May.

The growing medium can be precisely controlled in tubs, to eliminate nematodes and other soil parasites, and to maintain the proper moisture and fertility. I prefer an artificial growing medium based on equal parts (by volume) of peat and vermiculite, with added nutriments. A number of such artificial soils are available commercially, and one called Pro-Mix has given good results for me. I mix thoroughly 50 grams (about 4 tablespoons) of Magamp with 8 liters (about 2 gallons) of Pro-Mix A. A convenient container is a pressed paper tub 34 centimeters in diameter (13¼ in.) called Ranco Garden Pot, which comes from garden supply houses in cases of 15 for about 45¢ each.

Artificial growing media have less ability to hold mineral nutriments than garden soil. Therefore, there is considerable advantage in following a common practice of commercial growers called constant fertilization. All the watering is done with a weak fertilizer solution. This requires some extra effort, but it assures as nearly as possible optimum fertilization. When the soil on top looks dry, I water the tubs with the following solution:

10 grams (about 1 tbs.) Peter's 20-5-30 soluble fertilizer
10 liters (about 1 pail) water

With small plants in large tubs, weeks may pass between waterings with the fertilizer solution. However, large, mature plants will require watering every day in hot weather. In later stages of growth, zucchinis can be watered sometimes with water only, and finally only water need be given senile plants. Watering is the most burdensome chore of any tub garden. Tub plants outdoors in the sun have a habit of suddenly and dramatically running out of water. Making up a fertilizer solution for each watering may appear an unnecessary added burden. It is the price for a continuing supply of top quality squash from your doorstep.



One male and one female flower. The female flower has been pollinated and has folded up. Note also the squash that should be picked.

We don't, of course, give the plants precisely the amount of each mineral nutrient they need. There are always more minerals present in the soil than the plants can use when fertilizer is applied at each watering. The critical problem (and an important problem with any manner of fertilization) is to prevent an accumulation of these unused minerals, since in high concentration they burn the roots and retard growth. It is necessary, therefore, with constant fertilization, to flush out old unused minerals with each watering. This is easily done by watering with enough fertilizer solution to make sure that at least one-fifth seeps out the drainage holes and is wasted. With the tub size I use, about a pailful of fertilizer solution per tub is used at each watering.

Zucchini seeds can be planted directly in tubs of soil. For the first planting indoors in spring, I put three or four

continued

seeds in a peat pot of growing medium. As the plants grow, all but the strongest one are cut off. The plant with its peat pot is transplanted into the tub when two or three true leaves have formed. Be sure to leave ample space between soil and rim—at least 5 centimeters (about 3 in.).

Timing is quite important for a constant supply of squash throughout the summer. I keep two tubs of zucchini going, and this gives at times considerably more squash than we can use. As growth advances, zucchini plants tend to hang down over the rim, and finally they are best put on the mulch pile to be recycled. Seeds planted in late March start bearing in late May and continue until the middle of July or a little later. The latest planting I have made was July 15th. These plants bore first female flowers on August 24th and we picked the first squash on August 30th. The plants bore throughout the rest of the season. A continuing supply of squash from late May to late September requires at least three plantings: (1) in late March, (2) the middle of May, and (3) in early July.

Pests can be a problem with any of the cucurbits. I have gone through the first planting of zucchini from seed to senility without the need for any pest control. This may not be unusual in areas isolated from other cucurbits. However, as the season develops, pests are likely to move in. The safest practice is to drench the soil when the plants are young with a fungicide like:

3 grams (about 2 tsp.) Benlate
4 liters (about a gallon) water

Before the blossoms begin to form, the plant can be dusted with methoxychlor or sprayed with Diazinon. This should involve no significant hazard since the fruit has not yet developed, and the open flowers will contain no pesticide to injure pollinating insects.

I have gone through the first planting of zucchini from seed to senility without the need for any pest control.



The first flowers on zucchini are normally male. They are supported on a narrow stem and have a pollen-laden anther inside. Female flowers should appear soon after, with a fat ovary at the base and a sticky stigma inside. Isolated plants may need hand pollinating especially on the first planting in the spring. Pollen is collected on a tiny paint brush from the male flower and applied to the stigma in the female flower. Under poor culture and with plants in poor light, it is possible to have mostly, or even entirely, male flowers. I have never experienced the dearth of female flowers some growers have complained about.

There appears to be no striking differences among the various zucchini type squashes offered in seed catalogs. They all provide fine food whether eaten raw, sliced in a pan and cooked with butter, or gusseted, casseroled, and herbed. They are just about as good when grown to a large size as when picked small, although the small ones are a little better for eating raw.

●

Zucchini squash can be planted in containers early in the spring, grown outside during warm days and brought indoors at night.





photo by Carole Bell

digging for information

HORTICULTURAL CORRESPONDENCE

by Ed Lindemann,
horticulturist

calamondin orange tree

Q. Someone gave me a small Calamondin orange tree. A few of its leaves have fallen off. Can you tell me what is wrong? Can you give me instructions for the care of the plant?

Mrs. H.G., Philadelphia, Pa.

A. Your miniature orange tree should be grown in well-drained, general purpose soil. It prefers a cool but sunny location and good ventilation. The tree should not be in an area that will go below 45° at night. Water the plant lightly from October to February; however, do not allow the soil to become completely dry. The rest of the year the soil should be kept moist but not soggy.

Citrus plants will sometimes drop their leaves when first brought into the house because of high temperature and low humidity. Spraying the plant daily with a mist of water will help prevent the leaves from dropping. Fertilize the plant with a water soluble fertilizer once a month following the directions on the package. Do not fertilize the plant during November, December or January.

camellia

Q. I've enclosed a sample of a camellia leaf, which looks horrible. Can you tell me what the problem is?

Mrs. H.B.P., Wynnewood, Pa.

A. The specimen from your camellia plant shows that the plant is suffering from black mold, a disease common to camellias. The mold is easily identified by the black coating on the leaves. The fungus is caused when the plant is attacked by insects that secrete a substance on which the fungus grows. I recommend spraying the plants with malathion to kill the insects. It's also a good idea to remove and destroy all of the infected leaves.

paulownia tomentosa

Q. Can you identify for me the tree from which the enclosed leaf came? I am told the tree is approximately 40 ft. tall and the flowers are purple in the spring.

Mrs. J.F.K., III, Spring House, Pa.

A. The fruit specimen that you sent is from a *Paulownia tomentosa,* called the Empress tree. It is a rapid-growing tree quite similar to the catalpa. There are large pyramidal clusters of violet colored flowers during the middle of May and the leaves can reach a diameter of two to three feet.

holly leaf miner

Q. Is there anything wrong with this holly? It is growing on a sunny lawn and appears healthy in other respects.

K.W., Philadelphia, Pa.

A. The holly leaf that you sent shows that your plant is suffering from holly leaf miner. The serpentine shaped lines or blotches on the leaves may be yellow or brown. They are caused by an insect that tunnels. To control the pest you should spray the plant in April and again in May with either Isotox or Cygon following the directions on the bottles. Foliage should be sprayed again during July to kill any young larvae in the leaves.

aeschynanthus

Q. I've enclosed a few samples of the leaves that dropped from my lipstick plant. Can you give me any information that would help my plant to regain its former good health?

B.J.J., Folsom, Pa.

A. The leaf specimen of your aeschynanthus is infected with red spider mite. Spray the plant with kelthane, following the directions on the bottle. Red spider mites travel quickly from plant to plant so I would check your other plants for tiny spots on the undersides of the leaves.

Aeschynanthus plants rest during the winter and prefer a temperature around 65° during that period. The plant may be pruned then. Do not feed during the winter months, but start again at the beginning of March.

Your plant requires a high degree of humidity. Keep the pot sitting on a saucer of pebbles filled with water to help increase the humidity around the plant.

euphorbia mili

Q. I have a large crown of thorns plant. I would like to start some new ones. Can I propagate it and if so, how and when?

Mrs. F.L., Philadelphia, Pa.

A. To propagate your crown of thorns *(Euphorbia mili),* take stem cuttings approximately three or four inches long; don't worry about the flow of milky juice which will ooze from the severed stems.

Let them dry off for two or three days. Place them in damp sand. Make sure the sand is kept moist all of the time. Cuttings may be taken at any time; however, you might have better luck taking them in the late or early spring when growth is starting.

●

photos by author

azaleas
IN THE DELAWARE VALLEY

by Franklin H. West

The brilliant explosions of bloom from our evergreen azaleas add much beauty and color to dogwood time in Delaware Valley. The climate and the acid soil of the Philadelphia region is so uniquely hospitable to these plants that we tend to take them for granted. Observe azaleas the next time you travel out of our Valley to the west or north, and you will be surprised how quickly they disappear from the landscape. Except for a few favored coastal locations in New Jersey and Long Island, ours is the northernmost part of the eastern United States where such a rich variety of azaleas can be grown. Evergreen azaleas are a tremendous boon to the home owner who doesn't want to spend too much time pampering his plants, but does expect some aesthetic rewards in exchange for giving them room to grow.

One fact not generally known is that some varieties of evergreen azaleas such as Gable's Springtime (a bright pink and first variety to flower each year) will bloom two weeks before dogwood time, while others flower long after. Often on the 4th of July one can enjoy a beautiful display of the orange-red rosebud-like blossoms of Beni Kirishima. Next to roses, no other single family of plants has a longer blooming season in our valley than the azaleas and rhododendrons. By appropriate variety selection, you can enjoy their flowering from April to July, in many colors, shades and flower shapes, in various growth habits, with differing degrees of hardiness and landscape appearance at other seasons of the year.

Their cultural requirements are quite simple. Soil on the acid side (pH of 5.5 is ideal) with a generous admixture of humus and sufficient porosity to permit excellent water drainage (azaleas love to be moist, but never soggy). A surface mulch of organic material will provide moisture conservation, weed control, and a continuing supply of humus as it decomposes. They require no fertilizer, but do appreciate an application of iron sulfate or chelate every few years to maintain good leaf color and plant vigor.

Diseases are few. Lacewing fly can be a summer nuisance by causing fly-specked discolorations of the leaves as these pests feed on the undersides. Malathion easily eradicates them. One treatment in June and another in early August will usually assure unblemished foliage, especially if the spray is applied to the leaves from below upwards.

The other problem of azaleas—petal blight—appears from mid-May to the end of the season if there are many warm, rainy days. It can be controlled by using the fungicides Benolate and Daconyl, sprayed weekly on the flowers as soon as you discover the infection. The telltale sign is at hand when flowers collapse overnight into the texture of wet tissue paper. Another application of these fungicides just after flowering is over will inhibit the development of sclerotia in the dead flowers from which the spores of petal blight fungus will erupt the following spring if the season is favorable to them. Since 1958, azalea petal blight in our region has been a serious problem only three times; it was barely in evidence the other years.

Evergreen azaleas vary considerably in their evergreenness. This quality depends on which oriental ancestors have contributed genes to that particular plant. Usually it is only the cluster of small winter leaves surrounding the flower buds at the tip of the twigs that remain on the plant through the winter. On the Korean azalea, Poukhanense, these leaves are very tiny and narrow, and its hybrids have an almost bare look in winter. At the other extreme is the Japanese species, Indicum, which has many shiny, persistent leaves on its stems in addition to those around the flower bud. Its genes are dominant in the June blooming Satsuki azaleas and late blooming Glenn Dales which have a superb ever-

continued



Geisha





green appearance in the winter.

In late October and November, the summer leaves of evergreen azaleas undergo a striking autumnal color change before they drop off. Summer leaves are the ones formed in the first flush of stem growth after the spring bloom and are always larger and broader than the winter leaves which don't appear until flower bud set in August. Some gardeners mistake the autumn color change as a sign of disease, which is understandable, when they first discover that their lovely white azaleas are covered with bright yellow leaves! The summer leaves of all white evergreen azaleas turn some shade of yellow in the fall. Pink and red varieties turn various shades of red; lavender and purple azaleas change to orange tones; and striped-flowered sorts develop striped leaves! In all of the above, the winter leaves remain deep green or turn a lovely bronze-red. The scarlet flowered variety Stewartstonian has this feature, plus the added attraction of reddish winter stems.

Azaleas vary in form from almost prostrate (like the late blooming white Gumpo), and the very compact miniature types (like the double-rose pink Balsamineaflora and the exquisitly branched Japanese species, Obtusum) to those of more familiar size (typified by the most popular red variety Hinodegiri and its better cousins Hino-Crimson and Red Progress), to the near giants that grow 10 ft. tall and as many feet across if not pruned to limit their size. Good examples of large varieties are the white Palestrina (which derives its hardiness and vigor from the Kaempfer azalea of Japan), and the other Kaempferi hybrids with musical or poetic names such as Carmen, Beethoven, and Othello. Another giant is Martha Hitchcock, a Glenn Dale variety with white centers and bright magenta-edged flowers 4 in. across.

Hardiness, too, is quite variable in

continued



Above: Jindai

At left: Beni Kirishima



Polaris

evergreen azaleas, depending on their ancestry. One way to be sure of getting the hardiest sorts is to buy only locally grown plants until you are familiar with the hardiness rating of the varieties you desire. Such information is available from the American Rhododendron Society if you can't find it in your plant catalogs or garden books. The table accompanying this article gives some hardiness information on 80 of the best clones for this region. Hardiness is not purely a matter of genes, however. The specific growing conditions of a plant, such as exposure to winter winds and sun, excessive moisture, frost pockets and poor air drainage, reflected heat and light from an adjacent wall, insect assault, prolonged drought, or excessive summer shade could conspire to kill the hardiest specimen in a few seasons. The trick is to recognize and avoid these unfavorable microclimates in your garden when planting azaleas. However, these plants are so adaptable that they can adjust to any one adverse growing condition rather well.

Ultimately, the factor of greatest influence in azalea selection is their flowering characteristics. They come with single, hose in hose, or double flowers, varying in size from one-half inch to over four inches. They can be flat-faced, round-faced, cup-shaped, star-shaped, or tubular in form, with smooth, ruffled, or frilled petal edges. They come in every color but yellow and pure blue. Yellow and bright orange yellows can be had in the deciduous azalea hybrids, distant cousins of the evergreen azaleas, derived mainly from American native species and several Eurasian varieties. This group is leafless in winter, is not so finely branches, and is more expensive to buy because of their greater difficulty in propagation. (The Knaphill, Exbury, and Ghent hybrids exemplify these.)

In addition to solid colors, evergreen azalea flowers can be spotted, flecked, and blotched with another color, or have white centers and colored edges or the reverse. Such diversity adds great interest to any planting. The proper placement of the various colors in the landscape requires the assistance of a good pair of eyes, sensitively attuned to color harmonies. One secret of successful landscaping with azaleas is the generous use of white varieties which help minimize color clashes and actually help increase the attractiveness of the colored ones.

It has been my pleasure for the past 15 years to have studied more than 300 varieties in my garden. In addition, I have gathered the opinions of many other eastern azalea specialists in two attempts to find the most popular and dependable varieties for the Delaware Valley. The following is a summary of these studies, arranged by season of bloom and by flower color. Most nurseries will have some of them. All evergreen azaleas are so easily rooted that you can grow the unavailable varieties from cuttings if you are willing to give them special care for a year or so. Any hobbyist will be more than happy to share cutting material with you for the asking. Try me and see!

●

Franklin H. West is a psychiatrist who spends his leisure time gardening. He has an extensive collection of azalea and rhododendron. Dr. West is a member of PHS and the American Rhododendron Society; he is a member of the board of The Tyler Arboretum.

80 OF THE BEST EVERGREEN AZALEAS FOR DELAWARE VALLEY
SIX COLORS FOR THREE SEASONS OF BLOOM

EARLY (April 15-May 5)	MIDSEASON (May 5-20)	LATE (May 20-June 30)
I. White		
*1. Rose Greely (G) m, hh	*1. Mucronatum Del. Valley White (SP) m, s	*1. Gumpo (S) l, s
*2. Palestrina (Kmf) t, s	*2. Glacier (GD) m, s	*2. Angela Place (GD) l, s
*3. Polaris (G) m, d	3. Treasure (GD) m, s	*3. Everest (GD) m, s
4. Cygnet (GD) l, s	4. Helen Close (GD) l, s	4. Safrano (GD) m, s
5. Snow (Kur) m, hh	5. Polar Sea (GD) m, s	5. Swansong (GD) m, s
	6. Helen Curtis (SH) m, hh	
II. White (variegated, striped, blotched, or bordered with red, lavender, pink, or orange)		
*1. Geisha (GD) m, s	*1. Martha Hitchcock (GD) t, s	1. Jindai (S) l, s
2. Delight (GD) m, s	*2. Surprise (GD) m, s	2. Gyokushin (S) l, s
3. Capella (GD) m, hh	3. Mucronatum 'Magnifica' (SP) m, s	3. Kingetsu (S) l, s
	4. George Lindley Tabor (SI) m, s	
III. Orange Red or Orange Pink		
*1. Mary Dalton (G) t, hh	*1. Stewartstonian (G) m, s	*1. Beni Kirishima (S) m, d
*2. Addy Wery (Kur) t, s	*2. Greeting (GD) m, s	2. Copperman (GD) t, s
3. Ballet Girl (GD) m, hh	*3. Fashion (GD) m, hh	*3. Balsamineaflora (S) l, d
4. Ambrosia (GD) t, s	*4. Red Bird (GD) m, s	4. J. T. Lovett (S) m, s
5. Coral Bells (Kur) m, hh	5. Buccaneer (GD) m, s	(These 4 have good hardiness)
	6. Othello (Kmf) t, s	
IV. Rose Red		
*1. Campfire (G) m, hh	*1. Elizabeth Gable (G) m, s	1. Aztec (GD) l, s
*2. Red Progress (Kur) m, s	*2. Dragon (GD) m, s	2. Mai Hime (S) l, s
*3. Hino Crimson (Kur) m, s	*3. Glamour (GD) t, s	3. Pearl Bradford (GD) l, s
4. James Gable (G) m, hh	4. Sherwood Red (K) m, s	
	5. Margie (G) m, hh	
	6. Carmen (Kmf) t, s	
V. Violet Pink		
*1. Springtime (G) t, s	*1. Rosebud (G) m, d	1. Sagittarius (GD) l, s
*2. Dream (GD) m, s	*2. Louise Gable (G) m, d	2. Lillie Maude (GD) m, s
*3. Dayspring (GD) m, s	3. Lorna (G) m, d	3. Cameo (G) t, d
*4. Guy Yerkes (Kur) m, hh	4. Gaiety (GD) m, s	4. Crinoline (GD) m, s
5. Eleanor Allen (Kur) m, s	5. Prudence (GD) l, s	
	6. Grace Freeman (GD) m, s	
	7. Aphrodite (GD) m, s	
VI. Violet Purple		
*1. Herbert (G) m, hh	1. Zulu (GD) t, s	1. Sarabande (GD) l, s
*2. Big Joe (G) t, s	2. Muscadine (GD) m, s	2. Chanticleer (GD) m, s
3. Mildred Mae (G) m, s	3. Purple Splendor (G) t, hh	3. Dauntless (GD) l, s
4. Sherwood Orchid (K) m, s		

Key: (G) Gable - very hardy
(GD) Glenn Dale - average hardiness
(Kur) Kurume - average hardiness
(Kmf) Kaempferi - very hardy
(S) Satsuki - relatively tender
(SH) Shamarello - hybrid, very hardy
(SI) Southern Indian - relatively tender
(SP) Species Clone - average hardiness
s - single
hh - hose in hose
d - double or semi-double
l - low, under 3 ft.
m - medium, 3-5 ft.
t - tall, over 5 ft.

*Outstanding

WHEN ALL ELSE FAILS HAMAMELIS BLOOMS

A visit to the Morris Arboretum on a mild February day can allay the frustrations that attend late winter when we've had enough of cold and darkness. The Morris Arboretum, on Hillcrest Avenue in Chestnut Hill, has a particularly fine collection of the family Hamamelidaceae, predominated over by hamamelis, the witch hazel. While their bloom would be overpowered by the profusion of other showier blooms in April and May, hamamelis is singularly welcome for its habit of blooming in the months when it has virtually no competitors. The native American species, *H. virginiana,* which is a familiar sight in woodlands from Maine to Georgia, starts blooming in October as its leaves fall and continues until its cousins take up the challenge in early winter. *H. vernalis,* a native of the south-central states, and *H. japonica* may start to bloom in January if the weather eases. The showier *H. mollis* opens its ribbon-like petals in February or early March.

Although the hamamelis is snubbed by some because of its somewhat diffident blooming habits, the landscape gardener who overlooks it deprives himself of a rewarding relationship. A small tree or largish shrub, depending on whom you read, ranging from the 6-ft. *H. vernalis* to the 30-ft. *H. japonica,* hamamelis charms with its element-defying ways. It also has a delightful fragrance, ranging from delicate to commanding. And despite its native habitat of woods, rocky ravines and streambanks, it is remarkably tolerant of air pollution and thus amenable to city conditions. It is generally pest and disease free (with one minor exception to be noted later) and adjusts to a variety of soil conditions. Its rounded shape is pleasingly symmetrical, it does well in shade but better in sun, and if all this were not enough, it has a fine fall coloring, usually yellow.

To know the witch hazel is to love it. Perhaps it is not more widely appreciated because its "in-season" is everything else's "out-season." When the gardening bug bites and the urge to browse in a nursery is indulged, it is not the hour for the witch hazel to tempt. For better acquaintance, check the mature specimens in variety at the Morris almost any day from October to March. The majority of the Arboretum's collection of the Hamamelidaceae family (which includes fothergilla, parrotia, corylopsis, disanthus and, interestingly enough, liquidambar, the sweet gum) may be found on the west side of the grounds. After entering the gate on Hillcrest Avenue (a block from Germantown Avenue on the west and Stenton Avenue-Bethlehem Pike on the east), take the left fork in the path and follow it until it bends right and makes a sharp descent. The witch hazels will quickly be obvious on the right. An especially fine specimen of the variety *H. intermedia,* however, may be seen 15 ft. or so after the paths diverge near the entrance gate, tucked in behind two columnar chamaecyparis. The *H. intermedia* 'Arnold Promise,' a cross between *H. mollis* and *H. japonica,* has a fine reddish fall coloring and carmine blossoms in winter, quite spectacular against snow. A chief drawing card at the Arboretum, it has unfortunately been girdled by field mice. Its demise is being forestalled until sufficient cuttings are rooted to insure plenty of progeny. (Interestingly enough, *H. intermedia,* seeds of which were collected in China for the Arnold Arboretum, languished unnoticed there for 35 years until it was recognized as an outstanding plant.) Finally, for a complete tour, note the specimens of *H. virginiana,* growing along the stream bank to the right of the entrance, which were seen by this writer in full bloom last Thanksgiving.

The outstanding attributes of the oriental imports—*H. japonica,* the petals of which are unaffected by zero weather, and *H. mollis,* brought here from China in 1879 and generally considered the handsomest of the witch hazels—have led to the development of a number of varieties superior to the parents. Most are included in the Arboretum's collection. Among the japonica, note *H. japonica rubra,* which has yellow flowers stained with red; *H. japonica flavo-purpurascens,* with red flowers and deep purple sepals (examples of both of these are at Morris); and *H. japonica zuccariniana,* a pure yellow-flowered variety. Var. arborea is reputed to be a vigorous grower with fine yellow blossoms. The japonica are the tallest of the witch hazels and have an open, spreading habit.

Among the mollis varieties of note, Ruby Glow has plum-purple colored petals while brevipetala has orangy-yellow flowers. Pallida is also distinguished. The mollis, distinguished from other witch hazels by its tomentose leaf undersides and furry, stout twigs, grows to 20 ft.

Two worthy vernalis varieties are carnea, with red petals, and tomentalla. *H. vernalis* is on the small end of the size scale, growing only to 6 ft., and with an open habit, making it appropriate for those with limited space requirements.

For gardeners blessed with a woodland area, and maybe a bent for nostalgia, our native *H. virginiana* should not be ignored. Of moderate

MORRIS ARBORETUM
9414 Meadowbrook Ave. • Phila. • PA 19118
Ch 7-5777



Hamamelis virginiana in autumn



Hamamelis virginiana closeup in autumn



Hamamelis intermedia, early spring

size, about 15 ft., *H. virginiana* comes into its own as its leaves fall in mid-October. It can tolerate deep shade but can be used to good effect in the back of a shrub border. And it is one of those cherished plants reputed to "thrive under neglect." *H. virginiana* is subject to a gall if planted near birch, but it does not seriously impair the health of the plant and control is probably not worth the trouble. *H. virginiana* provided the essential wood of the dowsers without which our forefathers would never have dug their wells. The Indians used the bark for treating tumors and muscular pain and made a poultice from the inner bark for inflamed eyes. Extract of witch hazel is, of course, still popular for whatever relief it is supposed to give aches and sprains, and has its aficionados as an after-shave lotion.

Incidentally, there seems to be considerable disparity of thought as to why witch hazel is so named. Because its double valved seed capsule has the (excuse the pun) bewitching habit of shooting out its seeds—the record is said to be 36 ft.—walkers in the woods in more impressionable times thought witches were nipping at their cheeks and necks, or so it is said. More pedantic authorities agree that wich or wych is an Anglo-Saxon word having nothing to do with witches, but one school translates it to mean pliant or springy while another says it means drooping or pendulous. Linnaeus tapped it with an amalgam of two Greek words: hama, meaning together with, and melis, apple or fruit, because of its habit of producing fruit and flowers simultaneously. (Another Greek scholar says it means pear-like fruit.)

Whatever is in the name, hamamelis is worth its weight in Greek and Anglo-Saxon dictionaries. For what could be more charming on a dull February day than a spray of witch hazel brought into the house to open in full and to assuage by its perfume and delicate blossoms one's longing for spring?

●

by Ellen V. P. Wells

photos courtesy of
Morris Arboretum

MAHONIA BEALEI



photos by Donald Iffland

Mahonia bealei

THE
TYLER ARBORETUM
515 Painter Road • Lima • PA 19060
Lo 6-5431

There is in the Tyler Arboretum, just below Lachford Hall, a shrub that is probably, or possibly, well along in its second century of life. It is a large specimen of *Mahonia bealei,* one of the grape-hollies. It is a Chinese species, and when the Painters acquired it through the Josiah Hoopes nursery in West Chester in 1860, it was still a novelty in the western world, for Robert Fortune had sent it from China to England as recently as 1845.

The common name, grape-holly, is suitable, though misleading. The evergreen leaflets, edged with spines, do suggest holly, and the fruits, dark blue, with a grape-like bloom, are borne in grape-like clusters. The mahonias, however, are very closely related to the barberries, and botanists have sometimes lumped them together.

Mahonia bealei is handsome and distinctive. A whole leaf may be as much as 18 in. long, but it is divided into leathery bluish-green leaflets in five to seven opposite pairs with a single leaflet at the end. The foliage is arranged in whorls, and the shrub needs room to display it without crowding. This means a space of 8 to 10 ft. or more wide. The shrub will reach 7 or 8 ft. in height. Our plant at Tyler has a spread of 10 ft., and a height of 8. Some of the spread is the result of the heavy, wet snow of March 1958 which weighted down the long, flexible branches and almost completely buried them. They emerged unbroken, with a new shape.

The flowers are yellow, and very similar to those of the barberry, but produced in densely-set racemes that



Fruit cluster of *Mahonia bealei*

emerge during the autumn from fat terminal buds. They are so exposed that they are often killed by winter cold in our climate. If they survive to open in early spring, they are followed by the heavy clusters of fruits which are soon eaten by the birds.

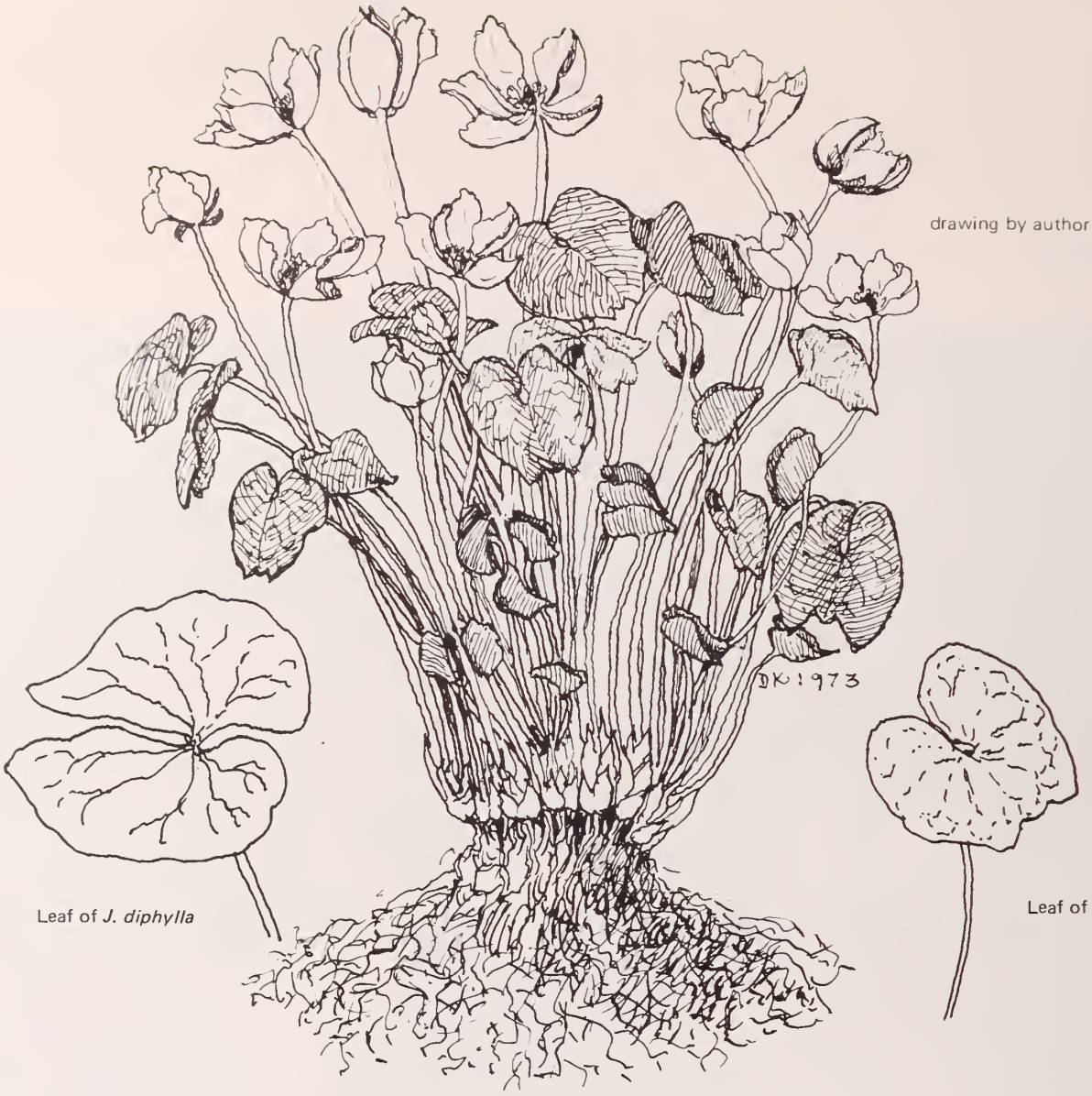
There are over 90 species of *Mahonia,* most requiring a warmer climate than ours, and some reaching as much as 20 ft. Even the ones that are hardy here are not often seen. Probably the difficulty of transplanting them is the chief reason. They are now sold in cans, and once they have been planted out, it is best not to move them again.

In addition to *Mahonia bealei, Mahonia aquifolium* is hardy here. This, the Oregon grape-holly, is usually 4 to 5 ft. high. The leaflets, 5 to 9 to a leaf, are a bright glossy green in summer, turning purplish in winter. *Mahonia nervosa* is also called Oregon grape-holly. It has more leaflets—11 to 19 to a leaf—and is lower in height. Although it is listed as hardy in our area, the only plant I have grown killed back every winter and finally perished. *Mahonia repens,* also from our Northwest, is quite similar in appearance to *M. aquifolium,* but only about a foot high. It spreads by stolons.

The name *Mahonia* was given in honor of Bernard M'Mahon, an early Philadelphia seedsman. His store was a popular meeting place for horticulturists and botanists, and it is thought that the Lewis and Clark expedition to the Northwest was planned in his house. Seeds from the expedition were distributed by M'Mahon and another Philadelphia seedsman, David Landreth. M'Mahon exported many seeds of American plants to Europe in the first part of the 19th century. He was also the author of the first important American garden book, the *American Gardener's Calendar.*

●

by Gertrude S. Wister



drawing by author

Leaf of *J. diphylla*

Leaf of *J. dubia*

DRAWING OUT THE *Jeffersonia*

by Doretta Klaber

Jeffersonia dubia was given to me years ago and has been a delight ever since. It was one of my pets that I never got around to drawing and describing. One reason is that it takes courage to dig up a thriving, rare plant in bloom. Another is that the flowers are so fleeting. You go out with trowel in one hand and flower pot in the other, ready to dig it up and bring it indoors to sit for its portrait and, likely as not, the flowers that yesterday inspired you to do this have dropped. It's true that new ones soon appear and the plant keeps blooming—

but cold wind or wet weather may interfere again with their blossoms. It takes two to three years of growth before the plants are large and floriferous enough to show their true nature.

It is April as I write this; the bloodroot and hepatica have been blooming, and as I walked around my primrose path I was greeted by the arresting sight of a good sized jeffersonia in full bloom. This was the moment, and I seized it—hurried for a trowel and pot, dug up all the roots carefully, pressed it into the flowerpot, brought it indoors—washed the soil from the roots in a bowl of water and sat down to draw.

The result, while not as perfect as I should like it to be, should give you a good idea of what *Jeffersonia dubia* looks like, even though on the illustration on page 26, I could not show the clear clean lavender of the flowers, nor the rich dark coloring of the leaves. The flowers have dark red sepals that drop early. The leaves come up in tones of rust and brown, purple and warm greens, dark in contrast to the flowers. All the stalks are slender and slightly fleshy in color and texture.

As you can see, both leaves and flowers grow directly from the root, each at the end of its scape, the flowers well above the leaves at this time. Later, the leaves enlarge to 2 - 3 in., lose some of the reddish purple metallic color of their youth, but still show traces of it along the veins and at the edges of the leaves.

Even if there were no lovely flowers, the foliage would be a real addition to the garden. Their texture is delicate (Japanese rice paper?) and their form is distinguished, while the clumps help furnish the garden with interest.

There are only two known species of jeffersonia. One, *J. diphylla,* is native to our eastern woodlands. It is a pleasant plant with leaves divided in half, 8 to 10 in. high when full grown, with white starry flowers, fleeting, but others keep on blooming for several weeks in spring. In April it comes up with stalks, buds and folded leaves of a uniform dull purple, hardly noticeable among the early growth in the woods—and giving no hint of the white flowers that will follow. The leaves are folded at first as if in prayer for a kind reception into a cold world, but they soon open and grow large, equalling and overtopping the flowers.

The second species, and the one I mentioned above, is *Jeffersonia dubia* from Manchuria and, to my mind, much more worthy of bearing Jefferson's name.

I spoke of *J. diphylla* as "pleasant." That term does not describe *J. dubia* at all. It is beautiful. Its flowers look like glorified hepaticas (incidentally, one of my favorites, so the comparison is a compliment) and they are set off by fat green pear-shaped pistils and yellow-tipped stamens.

Both species, to do their best, need a rich woodland soil in semi-shade. *J. dubia* is in full bloom while *J. diphylla* is in bud.

J. dubia seems content in a rather protected corner among rocks and tree-roots. However, it is absolutely hardy and perennial, and once you have it, you can look forward confidently to a special treat each season.

The green pistil turns into a seedpod, which when ripe opens half-way horizontally, the upper part making a lid so if you watch carefully you can collect seed. I saved some from my first plant and grew more. It takes patience, as the seeds need two years to germinate, but the plants are worth waiting for. Once established in congenial surroundings, they will gradually seed themselves and increase into fine clumps. The plants, when well grown, can be lifted after blooming and carefully pulled apart, being sure to have roots on each piece. Replant at once in the neighborhood of the others and of course keep watered until they have made themselves at home.

Where to get seeds is something of a problem and perhaps for members of plant socieities, the society seed exchange might be the best bet—or else a Japanese catalog. The plants disappear entirely over the winter so mark the spot—a guarantee that you will live happily ever after!

P.S. In case you are worried I replanted the one I drew, promptly and carefully, in its former home and it said "thank you" and pretends it never was on an excursion.

Doretta Klaber's drawings are treasures and are appreciated by artists and horticulturists alike.

Ms. Klaber is a dynamic woman with a varied and interesting background. She has been a resident social worker. She has been secretary to several organizations, including the Fighting French Committee (a pro-DeGaulle organization) and the Encampment for Citizenship (New York Ethical Cultural Society).

Ms. Klaber has designed and executed many gardens in the Chicago suburbs and Washington, D.C. She ran a rock garden nursery for 18 years and wrote and illustrated numerous articles and four garden books. The most recent, *Violets,* promised last spring, will be published—eventually. (For more samples of her work, see the perennials article in this issue and Dr. Wherry's piece back in the Growing Interests section.)

●



by Julie Morris

GARDEN ART FROM FAR AWAY PLACES

Using elements of design found in the gardens of other countries is a challenge many serious gardeners want to undertake. However, just copying a garden from another country may not be enough to satisfy the gardener. Her curiosity about why certain design traditions exist in different countries may lead to further reading and research. As many of us know the design style in most countries evolved as part of the social history. Understanding the reasons for such evolution may give more life and reality to a particular design in the mind of its architect.

The development of garden art is best explained and documented in the classic, *History of Garden Art* by Marie Luise Gothein. The two volumes by Gothein were written in the early part of this century and then updated and translated into English in 1925. Derek Clifford's *History of Garden Design* is a more concise work and can be used as an additional reference.

In the preface of her book Gothein says, "The indispensable condition for an adequate presentation of garden art is a critical examination of sources. In every epoch the material is new, and very different; and it has had to be extracted from literary records—often widely scattered. . . In my story I have laid particular stress on the actual historical moment, and on the indications, when the types first appear, of the way they take and the changes they suffer. By following this method one finds a surprising continuity from antiquity to the present day."

American gardens have a tradition that stems from our own social history as well as from influences of other countries. May T. Watts' *Reading the Landscape* provides delightful insight into our own background from privy planting to the estates of the nouveau riche. By looking through a few selected books on foreign gardens the gardener may better understand why certain features are implicit in a specific design.

Oriental influences are seen in more and more of our design patterns. For example, bonsai, the idea of gardening in containers, and the simplified landscape of sand and stone are facets of oriental tradition emulated but not always understood. It is difficult to transfer the measured patience and ceremony that go into the construction of an oriental garden to our own way of doing things. Understanding but not necessarily following the tradition can make the reproduction of an oriental design more meaningful.

Chinese and Japanese gardens are as different from our own as they are from each other. The book, *Gardens of China* by Osvald Siren, covers all the important dynasties and their individual garden styles. The landscape in China was closely related to painting and so the great painters were creators of the best known gardens. While few practical hints are offered, the underlying philosophy explained in the book will be of help to anyone considering a Chinese style garden. Siren writes: "Much of what is most essential in the Chinese garden eludes formal analysis, for it is due less to layout and the formal arrangement than to what vibrates through and around the various elements of composition, enhancing their power to bring out the rhythm of Nature." He points out that the Chinese garden can never be completely surveyed from a certain point. It must be discovered gradually as part of a homogeneous composition.

The books on Japanese gardening make up the largest part of the Library's collection of books about gardens in other countries. *Invitation to Japanese Gardens* with the English adaptation by Richard F. Dickinson is a great help in explaining the Japanese tradition and offering useful suggestions to western gardeners. Pond gardens and dry landscapes, pond gardens for strolling, pond gardens for viewing, and gardens where the aim is to incorporate a distant scene are illustrated effectively.

Dickinson covers well the history of Japan's garden art dating from 6th and 7th century temple gardens. In a chapter entitled "The Heart and Will Make a Garden," the influence of Buddhism and its philosophy of paradise is effectively explained. "What you should try to do is adopt the interesting feature of the garden into your own garden. At first feel free to imitate what is good and excellent in other gardens . . ." but the author warns if the garden is simply imitation it isn't yours.

Trees, an important part of most of our gardens, are not always used in Japanese gardens. Sometimes they destroy the purpose of the garden. They believe the subtle statements offered by rock arrangements or the sand and moss gardens would be overshadowed by the presence of trees.

Dickinson has included also a helpful glossary of garden terms in the book: "Enzanseki — A rock or rocks which serves to represent a distant scene of mountains. They are placed on the upper part of the miniature hill or mound."

Loraine Kuck has a long-time knowledge of the gardens of the Far East and has written the *World of the Japanese Gardens,* among other books. Her book covers the Japanese history from its Chinese origins. The color photographs in this book, as in all the books on Japanese gardens mentioned here, are exquisite.

Japanese Gardening Hints by Katsuo Saito is the "how-to" book for Japanese gardens. Gardens for rooftops, interiors and other adaptations of the traditional style are covered. Size and distance proportions in stone settings, stream construction, fence and screen and bridge construction are given in easy to follow and understand directions.

The gardens of Italy, France and England have most influenced us in this part of the country. Whether French formal or English countryside most of our garden styles have evolved from these styles.

The Italian garden is one of many levels, terraces, water, steps, plants in containers and sculpture. Those on the grandest scale are written about by Georgina Masson in her book *Italian Gardens.* Don't be put off by the grandeur of these gardens; the pictures and history offer ideas that we can adopt: the angle of a stairway, the placement of a terrace or wall and the use of water. The renaissance gardeners created splendor and opulence. They

continued

The simplified landscape of sand and stone are facets of oriental tradition emulated but not always understood.

photo by Chase Rosade

combined plant material with the art of the finest craftsmen, stone masons, sculptors and others. The designers rebelled against the small, studied enclosures of earlier medieval gardens. The book includes a useful plant list of material found in the Italian garden.

French gardens with their formal parterres, and clipped, pruned, pollarded, espaliered, manicured plant material have not been as easily transplanted to the United States as the English and Italian gardens. Most of us won't adopt the French formal tradition except in small ways such as espaliered trees, a bit of fancy pruning or a parterre or two. Plants in containers placed on terraces, balconies, windowsills and walls are a French fancy adopted by many Americans, especially those of us with tiny gardens who like the portability of pots producing a moveable garden.

England's heritage is everywhere and making a traditional English garden was in style for many years. Large perennial borders, flower-ladened vines gracing archways and the large flowery landscape that often tried to be more perfect than nature are part of the English tradition.

Inspiration came to the English garden-makers from the landscape paintings of the 17th and 18th centuries. Edward Hyams in his book *The English Garden* gives a thorough history of the English tradition. He explains how the early landscape painters theorized about nature as it was first created without fault, possessing a divine order. The intent in their painting was to correct and amend common nature and present it as it was first created. This fashion of out-doing nature was basic to their tradition but was finally put back into perspective. English gardeners then went back to growing beautiful plants and planning gardens so that they would be lived in and enjoyed from within rather than viewed from a castle three miles away.

People make gardens for their own pleasure whether what pleases them is the current design fad or traditional style. Books have recorded the evolution of garden art from many countries; this valuable heritage is no farther than your own library.

reading list

HISTORY

A History of Garden Design
Derek Clifford
New York, Praeger, 1963

History of Garden Art
Marie Luise Gothein
Germany, 1913
English edition, 1928 - reprint 1966,
Hacker Art Books, N.Y.

Reading the Landscape
Mary T. Watts
New York, Macmillan, 1957

Reading the Landscape in Europe
Mary T. Watts
New York, Harper and Row, 1971

CHINESE

Gardens of China
Osvald Siren
New York, The Ronald Press Co., 1949

JAPANESE

Invitation to Japanese Gardens
English adaptation Richard F. Dickinson - Nabunao Matseyana
Vermont, Charles E. Tuttle Co., 1970

Imperial Gardens of Japan
Takeji Ianrija
Tokyo, Walker-Weatherbill, 1970

The World of Japanese Gardens
Loraine Kuck
New York, Walker-Weatherbill, 1968

Japanese Gardening Hints
Katsuo Saito
Tokyo, Japan Publications, Inc., 1969

Magic of Trees and Stones
Katsuo Saito and Sadaji Wada
Tokyo, JPT Book Company, 1964

ITALIAN

Italian Gardens
Georgina Masson
New York, H. N. Abrams, Inc., 1961

ENGLISH

The English Garden
Edward Hyams
New York, H. N. Abrams, Inc., 1966

●

classified ads

Horticultural Pottery, Terra Cotta Fountains, Topiary Frames, Water Gardens. Custom designing in pottery and frames. Jean Salter, 767 Chester Creek Road, Chester, PA 19015. Call 874-2266.

Horticultural Consultant Service. I have a BS degree in Horticulture from Penn State, with a 30-year background in the field of Horticulture and general Landscaping. I can help solve any problems or go over your property and make recommendations that could prevent problems.

Naturalistic to formal settings, plants and plant problems, site preparation and grading problems. Consulting done on a fee basis. Hugh J. Peeling, P.O. Box 5, Concordville, PA 19331. Phone (215) GL 9-3192.

FOR SALE. Plants for house and greenhouse, including rare and hard to find varieties. Call TU 4-0497.

Used and out-of-print books. Large selection includes horticulture, nature, travel, art, etc. Also special periodicals: Horticulture, Gourmet, Antiques, etc. The OWL, Morris and Yarrow, Bryn Mawr, PA (2 blocks north of Penn Central station). Tel: LA 5-6117. Hours: Tues. & Thurs. 1 - 6, Sat. 10 - 1.

PLANT STAND. Handcrafted, attractive, all wood. Accommodates hidden growing lights. Four (or more) shelves are depressed and can be made water-tight to hold pebbles for watering. Usual size: 14" x 52" x 72". Call Judith – VI 8-2591.

BEGONIAS—Rare and Common—over 350 varieties. Also unusual House Plants. Price list 25¢. BEGONIAS & EXOTIC PLANTS, 42 Candee Avenue, Sayville, Long Island, NY 11782 (516) 589-4763.

Established Center City plant store FOR SALE. Serious inquiries only. Reply Box LGM-1, c/o The Green Scene.

Center City garden center seeks merger with successful expanding suburban garden center. Reply Box LGM-2, c/o The Green Scene.

Polly Fairman's Indoor Bonsai Greenhouse and Japanese Gardens, 103 Mt. Lucas Road, Princeton, N.J. 08540. By appointment. 609-924-3202. Indoor Bonsai a specialty. Gifts for plant loving friends and relatives. Supplies, planters. Saturday morning workshops and clinics for all Bonsai problems. Grooming and boarding. Japanese landscaping. Lectures for garden clubs at Poly-En Gardens.

Wanted: Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd., Media, Pa. 19063. Telephone Ben Palmer, TR 2-7206.

WILDFLOWERS, HERBS, PERENNIALS, TERRARIUM PLANTS – our specialty. Come see our gifts and antiques too! Two new shops . . .

The Rustic Gardens
Sterling Center
Route 202
Lahaska

The Plumstead Village
Route 611
Plumsteadville

AFRICAN VIOLET COLOR CATALOG 25¢. Violets, accessories, terrariums, lighting equipment. Open daily & Sunday afternoon. TINARI GREENHOUSES, 2325 Valley Rd., Box 190, Huntingdon Valley, PA 19006.

EARN MONEY by selling herbs at your spring fair. We will supply your choice of 35 varieties of healthy herb plants in labeled peat pots. Write Ryder's Herb Farm, 212 Moore Lane, Haddonfield, NJ 08033.

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

'margaret mary'

While the water lily is the equal of any flower both for beauty and length of bloom, most gardeners never consider it, simply because they lack a suitable pond or pool. This omission is an unnecessary sacrifice. With a large enough container, a sunny location, and the right type of plant, it is entirely possible to raise lilies successfully in a small tub garden. I use an asbestos cement container with a maximum diameter of 24 in. and a width of 19 in. at the top; the top curves inward. The height is approximately 20 in. I plant 'Margaret Mary,' a tiny blue tropical variety available from Three Spring Fisheries, Lilypons, Md. 21717. Other suitable smaller lilies can be obtained from specialty houses.

Selecting the tub is an important step. Since water lilies require full sun, a patio container cannot be sheltered readily, and if the tub is small, the water will overheat. Moreover, if the diameter of the pot at water level isn't large enough, the leaves will crowd, marring the appearance of the display. I would not recommend a patio planter with a top diameter of less than 18 in. or a volume of less than 3 cu. ft. Sinking the container into the ground gives adequate temperature protection and permits the use of a shallower container.

Once you have the container, it is no great trick to grow the lily. About 6-8 in. of soil, free of peat moss, is placed in the container with a nontoxic lily fertilizer, available from a number of sources. A single lily is planted in the soil, with the crown just projecting above the soil line. Finally, about one inch of sand is placed on top of the soil to keep the water from becoming muddy. Fill the container to the top with water: depth isn't critical; the plant will be submerged but will grow stalks enabling it to adjust to any water depth between 6 in. and 2 ft., measured from the surface of the soil.

Water lilies are not particularly subject to disease or insect pests, except for plant lice, which are easily washed off and flushed over the edge of the tub. It is necessary to add fish (and preferably snails) to keep the water free of mosquito larvae and to provide interest. Ordinary pond goldfish work well, and a pair will do the job for the usual size container. However, fish are sensitive to lime and other toxic materials, including wood, so that the container must be made of a nontoxic material, or it must be purged. To purge, fill the container; allow it to sit for several days; pour out the water and repeat the process four or five times. This method is adequate for cement or asbestos cement, and I believe for most other types of containers. Similarly, if your water has a high chlorine content it may be necessary to age it by letting the water sit in a nontoxic container for about a day before it is added to the lily container.

Growth of algae sometimes poses a problem in a small lily pool. While there are chemicals to restrict algae growth, it is easier—and safer—to simply flush the container with cured water, or with water straight from a hose if your tap water has a fairly low chlorine content. Don't replace more than half the water at once. Flushing also serves to control the temperature should an unusually hot spell threaten your miniature lily garden. I do not know the upper temperature limit, but so long as the water stays below 98°, neither the plant nor the fish seem in jeopardy. The fish will generally give you the first hint, for heat drives oxygen out of the water and they will rise to gulp air from the surface.

Robert Ryan

Robert Ryan has been on the PHS Council for four years. He is an attorney in the firm of Drinker Biddle and Reath and in his free time enjoys growing water lilies.

photo courtesy of Three Springs Fisheries



continued

photo courtesy of Longwood Gardens



Meehania cordata

Patrick Redding was a student in the Longwood Graduate Program at the University of Delaware when he wrote the accompanying article. He is now an administrator with the American Association of Nurserymen in Washington, D.C.

meehania

In this age of the low-maintenance garden, the cry for new and useful ground covers is frequently heard. I was recently delighted to run across one new to me, *Meehania urticifolia.* There it was, in full bloom, nicely carpeting the ground at the edge of the woods; it had made itself at home. Research led me to discover that it is a close relative of *Meehania cordata,* a native to the Eastern United States, and that *M. urticifolia* is native to damp woodlands of Japan, Manchuria, and Korea. Plants of the latter species were brought to the United States in 1957 following a U.S.D.A. collecting trip to Japan. Specimens arrived at Longwood Gardens through a plant exchange in 1961. Both species are now grown there. *Meehania cordata* is found in the wildflower garden and *M. urticifolia* has found a niche in the rock garden where its large blue flowers in attractive, one-sided spikes are among the earliest spring flowers to be seen by the public.

The genus consists mainly of small, stoloniferous perennial herbs with opposite, petiolate and toothed leaves. Plants superficially resemble Gill-over-the-ground. Blue flowers appear with two lips like a snapdragon or salvia, on erect stalks in the early spring. These are followed by long arching growths from underground rhizomes, which root where they touch the ground. Both species are quick to spread and *M. urticifolia* may be almost invasive. Like most mints, they are easily propagated by cuttings.

It is of interest that we now have both species doing well in this area since the generic name honors Thomas Meehan (1826-1901), a resident Philadelphian, botanist, nurseryman, garden editor and statesman. Gardeners and growers who have neither plant might contemplate the following passage from Meehan's *Monthly* in 1894 concerning *M. cordata:* "Although the plant is not uncommon in woods and thickets from western Pennsylvania to North Carolina, it is not growing in the Meehan Nurseries, and as it is a flower well worth cultivating, a root or two from some good friends who may chance to come across it, or a few seeds, would be thankfully received." A similar recommendation might be given the earlier blooming *M. urticifolia* which was unknown here until 1957.

Both plants have been distributed to PHS members at the annual meeting in the last two years.

Patrick Redding

trillium grandiflorum

The flowers of giant trillium, *Trillium grandiflorum,* commonly open white, but turn pinkish as they fade. On peninsulas of upper Chesapeake Bay, however, there are colonies in which the flowers open a lovely pink, so would seem desirable for cultivation; but when transplanted to the wildflower garden, the color fades and the flowers are just as white as in the typical species. As an ecologist interested in soil problems, I was asked, How come?, so I decided to look into the matter.

On visiting the stations of pink-opening trillium, I found the soil to be unusually rich in iron, made soluble by acids from the woodland humus. The pinkness of the flowers was, then, in a sense pathologic, a response to iron-poisoning. When transplanted to garden soil low in iron, then, the pink hue failed to appear. If one wishes their giant trillium to open pink, it is only necessary to add a few spoonfuls of commercial iron chelate solution around the roots.

Other wildflowers may respond in a similar way. In colonies of hepatica, *Hepatica americana,* there are occasional individuals with deep-hued flowers, which on moving to the garden are unattractively pale-hued the following spring. Here, too, iron chelate may intensify the color; if the soil is strongly acid, this will be pink; if circumneutral, lavender-blue.

Edgar T. Wherry



drawing by
Doretta Klaber

Dr. Edgar T. Wherry is well-known to many PHS members. He is the country's foremost authority on ferns, phlox and wildflowers and a staunch advocate of the virtues of our native plants. PHS circulates 10 books written by Dr. Wherry.

'windbeam' a.e.*

'Windbeam' has rapidly become one of the most popular small-leaved hybrids on the East Coast because of its superior plant habit, reliable hardiness and abundant flowering. A seedling of the late Joseph Gable's 'Conestoga,' a cross between *R. carolinianum* x *R. racemosum,* which was grown, selected and named by Guy Nearing after an impressive performance in his plantings in northern New Jersey.

'Windbeam' has attractive evergreen leaves like those of *R. carolinianum* but much smaller, the branches slender and graceful, the habit dwarfish and compact, with many stems spreading from the base. The original plant, raised at Ridgewood, N.J., grew to a height of 6 ft. in its first twenty years. Flowers open in large erect clusters smothering the whole plant about May 10th in New Jersey and on Long Island, with bloom apricot in tint in bud to pure white when fully open. After three or four days the white flowers become suffused with soft pink. Sterile and setting no seeds, the faded flowers need not be removed, and the plant produces a great abundance of bloom every year. Mr. Guy Nearing, a rhododendron breeder, reports that flower buds may be injured at temperatures of 20° or so below zero.

Certainly one of the most floriferous hybrids, 'Windbeam' makes an admirable display in a foundation planting or evergreen shrub border, best with light shade. Plants respond well to pruning. It propagates readily from cuttings.

Gordon E. Jones

*Reprinted with permission from the *American Rhododendron Society Quarterly.*



'Windbeam' at Planting Fields Arboretum

Gordon E. Jones has been director of the Planting Fields Arboretum in Oyster Bay, L.I., New York, for 17 years. He is also on the board of directors of the American Rhododendron Society.

This article was reproduced because of the popularity of the 'Windbeam' in the Delaware Valley area; we felt it would be an appropriate growing interest in view of Dr. West's fine article on azaleas, which also appears in this issue of *The Green Scene.*



The azalea garden behind the Philadelphia Museum of Art on the Parkway is a gift from PHS. For more about azaleas, see page 16.



THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Railroad Horticulture

MAY • JUNE • 1974
$1.00



13



2



28



7

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 5 May, June, 1974

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*President*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Charlotte L. Archer
M. M. Brubaker
Frederic W. Clark
George M. Harding
Nancy Howard
Craig S. Oliver
Ralph M. Sargent

DESIGNER
Julie Baxendell
Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 5, published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1974

in this issue

1 Guest Editorial *by R. W. Lighty*

2 A Gardener Rides the Train *by Martha L. Garra*

7 His and Her Rock Gardens *by John S. Kistler and Anita Kistler*

13 Air Layering *by Ernesta D. Ballard*

21 Digging for Information *by Ed Lindemann*

22 Books and the Green World: Dried and True: Collect Now for Dried Arrangements *by Julie Morris*

24 The Morris Arboretum: However You Spell It, Wisteria Means May *by Ellen V. P. Wells*

26 The Tyler Arboretum: The Sweet Bay . . . Magnolia Virginiana *by Gertrude S. Wister*

28 Growing Annuals at Ambler *by Viola K. Anders*

31 Growing Interests

33 Classified Advertising

Front Cover: Plumed poppies *(Bocconia cordata)* line the tracks along a stretch of the Reading Railroad. See page 2 for story.

Front cover photo by Edmund B. Gilchrist, Jr.



guest editorial

it's about time we worked together

One of the most pervasive trends in commerce over the last 100 years has been the tendency for those institutions that must make a profit to amalgamate where possible to avoid duplicating effort. Sometimes firms that make similar products or offer similar services have merged to use capital more efficiently. Other firms with dissimilar products or services have merged to use time, labor or capital efficiently to complement each other.

In conspicuous opposition to this trend is another group of institutions among which the drive for efficiency is not so great. These are the nonprofit organizations; those insulated from the market, having only to satisfy closed groups of patrons and friends to assure their continuance. Many governmental agencies, religious organizations, museums and societies fall into this category. Horticultural institutions operating for the public good clearly belong here.

In the Delaware Valley we have a large number of horticultural institutions and organizations. These vary in type from strictly volunteer garden groups of all sizes and persuasions to the single-interest plant societies, general plant societies and finally to the arboreta and botanical gardens. Some are local in appeal and services, others draw from the whole Valley and beyond. Some have property and wealth, others struggle along on limited dues and donations. The best have a commitment to serving the public through plants. All require some administration, communication, record keeping and program planning.

Invariably these latter functions are the onerous ones. In larger organizations special staff can be hired to perform them, in the smaller ones these burdens must be assumed by volunteers or by staff whose major interest is in horticulture, botany or teaching. Anyone involved in these smaller organizations knows how difficult it is to keep good records, get publications together, send out notices, and arrange programs.

What stands in the way of cooperation in these areas where, seemingly, all can gain? A misplaced sense of pride may cause an organization to remain apart from other similar organizations. But voluntary cooperation need not mean a loss of identity or sovereignty. Perhaps expense is used as an excuse. But who has actually looked into that problem? Most organizations don't even have accurate figures on what it costs them to provide their present services.

There are, particularly among the larger institutions, rumblings of cooperation. Perhaps we all should look at our organizations to see if there are savings to be had or additional services to be offered by cooperating with our neighbors.

●

R. W. Lighty

Richard W. Lighty received his Ph.D. from Cornell, where he specialized in plant breeding and taxonomy of cultivated plants. He has worked as a plant breeder at Longwood Gardens and has explored for plants in Korea and Central America. Lighty is coordinator of the Longwood Graduate Program in Botanical Garden Management at the University of Delaware.

A GARDENER RIDES THE READING



The passengers who ride the Reading Railroad from Ambler to Philadelphia, like passengers everywhere, spend the time in various pursuits. Some of them read the newspaper or a book, some study or finish reports, some knit or do needlepoint while others stare out of the windows with unseeing eyes. But for those who are gardeners, every mile of the journey can be an adventure as they watch the seasons come and go with the changes they bring to the earth. This is the story of one such adventure.

I have seen and enjoyed plants and trees from the train windows over a span of 45 years, years that have brought many changes. Open spaces that were once well-tended farms became real estate developments and are now communities of homes, some with gardens, some without. The small streams that flowed beside the tracks and occasionally crossed under them are no longer as clear and sparkling as they once were; more debris is deposited in them now. The large swampland to the east just beyond the Fort Washington station where many generations of local boys trapped muskrats is now the Fort Washington Industrial Park.

Seven years ago the local 4-H Club planned and planted the station area at Ambler. There was an existing planting of two very handsome specimens of yews placed at either side of the station building, one Colorado spruce and a barberry hedge. To these were added five more spruce, and flower beds were laid out along the front of the building using perennials, annuals and bulbs. For several years it was carefully tended; pansies were set out in the spring to be followed by petunias for summer bloom. And I seem to remember even a few Canterbury bells that were followed by *Salvia farinacea*. No one has done any gardening there recently but a few of the bulbs and perennials have survived to provide an example of the kind of material that can endure neglect. Narcissus, German and Silberian iris, lily-of-the-valley, daylilies and *Lysimachia punctata* with a few golden chrysanthemums are still growing there.

A rather wide variety of trees can be seen and enjoyed from the train windows: oaks, maples, buttonwoods, sassafras, willows, magnolia, cherries, many early flowering fruit trees, even an occasional pear tree. A few special individual trees such as the beautiful American elm can be seen over the rooftops in Glenside or the perfectly shaped *Cedrus atlantica glauca* in North Hills. The *C. atlantica* for some strange reason never seems to get any larger. The number of species diminishes as you get closer to the city where, except in the parks, the habitats are rather restricted. Here you will see buttonwoods, Norway maples, gingko, Carolina poplars, catalpa and an occasional Lombardy poplar. But as the train reaches the heart of the city the one tree that you see more than any other is *Ailanthus altissima erythrocarpa*—the tree of

continued



photos by Edmund B. Gilchrist, Jr.

Train tropism? Railroad horticulture creates its own reflexes as plumed poppies gracefully bend toward whizzing train.

by Martha L. Garra

The *Bocconia cordata* lining the tracks on the cover escaped from Flowerhill, the home of a PHS member near Fort Washington.



heaven. Indeed it does seem to be a gift from heaven by way of China having been introduced into this country in 1784. Those gardeners who first grew it could not know that in less than 200 years it would be one of the few trees able to withstand the polluted air of the late 20th century. Admittedly it could be considered a weed tree, but it cannot be denied that it has brought its own special beauty, a touch of green and cool shade to many blighted areas of the city where nothing else would grow.

While certain plants have been driven out by encroaching developments, others have been introduced. Years ago it was rare to see the silk tree—*Albizzia julibrissin*—in this area; now it seems to be well distributed and can be noticed in more gardens every year.

One of the very special sights that I enjoy each summer is the drifts of plume poppy—*Bocconia cordata*—that stretch along both sides of the track for almost a mile near the Fort Washington station. These plants escaped from "Flowerhill," the garden of Mrs. Arthur Dewar. I suspect that they ran away to grow along the railroad to watch the world go by. They are tall and stately with bold foliage, creamy white flowers and pinky beige seed heads. The suction created by the train as we go by causes them to bend gracefully; they seem to be bowing to me. I find myself bowing in return discreetly, of course.

Years ago it was rather exciting as the train pulled out of Wayne Junction to see how the tracks divided again and again to right and to left . . . From a bird's eye view it must have looked like a giant espalier of steel branches.

The rolling fairways of the Sandy Run Country Club and of the North Hills Country Club stretch away to the southwest after the train passes the Fellwick flag stop and it is always interesting to see these studies on the theme of green because the grasses on the fairways are a different shade from the bent grasses on the greens. All of the grasses contrast with the deciduous trees and the dark evergreens that separate the fairways. These two sites also afford the opportunity to study the artistic anatomy of trees, especially when snow is on the ground. Since the trees are some distance away they stay in your line of vision for a longer time than the trees close to the tracks which can be observed for only a brief moment as the train hurries past.

The type of trees and shrubs used in the municipal park that adjoins the parking lot at the Jenkintown station is one of the better examples of this type of planting and there is always something of interest to enjoy whether it be spring bloom, autumn color or winter silhouette. Just beyond the station on the east side there are beautiful polypody ferns growing out of the stone retaining wall. There used to be a good example of carpet bedding at this station, a diamond shaped bed set on a sloping bank spelling out the legend "Reading Lines."

In the Tabor, Logan, Wayne Junction area the railroad cuts across the land that was once the country seat of James Logan, William Penn's trusted provincial secretary. His house,

Framed through the American beech trees and the tulip poplar (dark trunk, left foreground) is the parking lot of the Jenkintown R.R. station. Left center is the station itself. The park next to the station is a year-round pleasure.





Velvet leaf *(Abutilon theophrasti)*, a wild flower, nestles in the Reading tracks at Chestnut Hill Station.

"Stenton," can be seen on the left and on the right, on high ground, "Loudon," the home of one of his descendants. His gardens and orchards are said to have been very extensive and one cannot help wishing that it were possible to see them today.

Years ago it was rather exciting as the train pulled out of Wayne Junction to see how the tracks divided again and again to right and to left until there were enough parallel steel ribbons to fill the busy freight yard. From a bird's eye view it must have looked like a giant espalier of steel branches. It was interesting to speculate where all the cars had come from and where they were going and what plants they may have passed in their travels and if the seeds of any of those plants had hitched a ride. This freight yard was well kept and I always felt that, because of the neatness and order, it had its own kind of beauty. Now many of the sidings are unused and rusty but nature has tried to soften the look of neglect. Many different grasses grow there now and are especially attractive in the autumn when they turn to many shades of brown and gold. Our native asters, especially the calico aster—*Aster lateriflorus*—now hang in tumbled masses over the tracks.

The most beautiful specimen of *Ilex crenata* that I have ever seen graced the Logan station. It did not show any evidence of ever having been pruned yet its silhouette was a delight to me every time the train stopped there. In recent years the stops were rare at Logan so I had to be content to mentally wave to my friend as the train hurried past. Now it does not matter because my friend, the ilex, is gone.

Another pleasant memory is of the almost intoxicating scent of honeysuckle on a warm evening in early summer when the windows would be open as the train returned from the city. In this day of air-conditioned cars no traveler can now enjoy that simple pleasure.

On Godfrey Avenue near the Fern Rock station there is a very high and massive stone retaining wall. Planted at the top is a group of *Forsythia suspensa sieboldi.* With space unlimited beneath them, each spring they spill a golden shower of flowers down the

continued

wall and must certainly have the longest branches of any forsythia in cultivation.

There is one special block of row houses in the city where every house has a garden. Perhaps there was a community project long years ago when the houses were new because there is a continuous iron fence along the back of all the gardens parallel to the railroad tracks, and the gardens are separated from each other by the same type of fencing. Then too, there was a conscious effort at design in many of the gardens which suggests that there might have been a contest to see who could plan the best garden. Some used an arbor as the focal point at the back of the lot; others constructed a larger arbor in the center of the lot with a paved area beneath it with benches for sitting while flower beds were laid out along some of the dividing fences. Roses were the favorite flowers in most of the gardens and this block was a sight to behold in June. The colors were glorious. I remember that Paul's Scarlet Climber was the favorite variety for the arbors and the fences. I think that the neighborhood has changed hands in recent years but the gardens are still there and cared for too, even if with not quite the same skill the original owners lavished on them. In late October I was startled to catch a glimpse of *Aster tataricus* growing outside the back fence of one of the gardens. This worthy, tall growing perennial from Siberia is very rarely seen in gardens today and it is interesting to speculate how it got to that particular spot.

The years that lie ahead will bring other changes. Perhaps we will see again from the train windows some evidence of an interest in real gardening, pride in well grown flowers and vegetables, a respect for the land and what grows on it. Whatever the changes may be here is one gardener who will always find the train ride an adventure. ●

photo courtesy of City of Phila. Records Dept.



Mermaid Lane Station on Chestnut Hill Branch of Reading R.R., 1929.

his and her ROCK GARDENS

When a husband and wife enjoy gardening, but each has strong definite opinions as to how it should be done, the best solution is to have separate gardens. My wife Anita has her ideal location of partial high overhead shade, while I have my sunny garden with a white birch and native red cedar introduced to pamper a few shade loving plants. Anita specializes in collecting alpine plants; I prefer drifts.

J.K.

his

by John S. Kistler

I believe that a rock garden should serve two purposes. First, it should create an ideal setting for alpine and saxatile (rock loving) plants. Second, it should present an aesthetic garden scene. Nature provides mountains, cliffs, screes,* moraines,** outcroppings, ledges or alpine meadows. Any one, or any combination of these, may be used to create or stage a setting for a rock garden.

While a pile of rocks might satisfy the plant's needs for good drainage and cool roots, it shouldn't be an unattractive pile of rocks with some plants growing here and there between the rocks. Design or form is important to create a smoothness of line that nature would give. The rock garden should be pleasing and interesting to the eye at all seasons of the year, with or without the garnish of bloom.

If the area to be developed is flat, it can be treated as an alpine meadow with varying sizes of boulders or rock outcroppings. An outcropping introduced into a flat area would produce a feeling of change of elevation or even bring into the garden a memory of a part of a mountain or the alps. A simulated scree or moraine might be included at the base of the "mountain" as is typical in nature. The scree creates an ideal growing condition for plants. If the ground is sloping, a rocky hillside, cliff or mountain can be simulated to produce a picturesque setting for the plants. If done with any of these thoughts in mind, the garden would afford pleasure at all seasons.

During spring, summer and fall, color of bloom is an important addition to make the garden more pleasing to the eye. Although the various shades of green foliage are colors, other colors are desirable to relieve the monotony of green, particularly throughout the summer.

The purist says that only true alpine type (low, compact growing plants) should be used in a rock garden. To me they can be monotonous and will almost limit one to spring bloom. Nature does not produce that effect. Even her meadows are a combination of plants of varying heights.

Relief from this monotony can be attained by using occasional upright growing plants such as species tulips, iris, columbines, *Dianthus* Bravo or Zing, *Phyteuma scheuchzeri, Platycodon grandiflorum mariesi,* azalea mums, heathers and heaths, azaleas, dwarf rhododendrons and dwarf conifers. These upright or taller growing plants can also further accent features of the design. In the photograph the *Pinus montana* adds a feeling of more height to the outcropping, and the scale of the *Picea glauca conica* is reminiscent

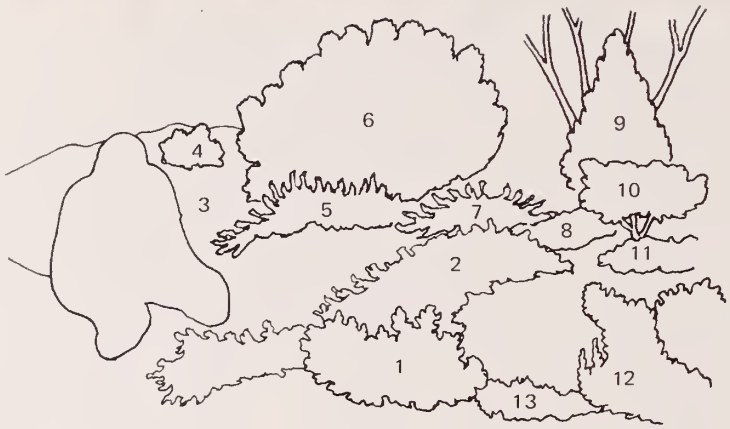
continued

*Scree: rock chips accumulating at the base of cliffs or in a pocket of a mountain.
**Moraine: an accumulation of broken rocks and gravel formed by glacial action and kept moist from beneath by running water.



photos by Edmund B. Gilchrist, Jr

John Kistler pampers his shade-loving plants.



1. *Sedum spectabile*
2. *Cotoneaster salicifolia nana*
3. *Phlox subulata*
4. *Helianthemum nummularium*
5. *Erica carnea* cv. Springwood White
6. *Pinus mugo*
7. *Genista sagittalis*
8. *Lewisia cotyledon*
9. *Picea glauca conica*
10. *Azalea* cv. Sherwood Red
11. *Gentiana scabra saxatilis*
12. *Euonymus fortunei* Longwood
13. *Mazus reptans*

of a distant forest background.

Many of us gardeners are tempted to start horticultural collections, and with the wide variety of interesting rock garden plants it is hard not to do so. Too often we are tempted to stick in so many "related species" that we end up with a patchwork quilt rather than a harmonious composition. In nature, plants are usually found in colonies and intermingled with other species. So, the best practice is to use will power and limit one's self to a few genera and species and plant them in colonies or drifts of three, five, seven, etc. That will avoid a spotty appearance and yet not be monotonous if occasional accent plants are included as they would be in nature.

Some of my favorite spring bloomers are:

Alyssum montanum, a very compact, yellow April blooming spreader with a small, silvery green leaf for later foliage color.

Alyssum saxatile and var. *citrinum* are good accent plants due to the taller yellow bloom and the large scale thumb length leaf.

Arenaria montana can't be beat for its May white bloom and the rich dark green foliage.

Anacyclus depressus is a low flat lacy-leafed daisy (white with the reverse of the petals red), which self-sows in my scree although it seems to take two years to germinate.

Iris pumila attica is a gem of a low early abundant blooming yellow iris followed by short upright spear-shaped leaves. It moves at any time and can be forced in a window during the winter.

Aubretia, any species or variety is good for meadow, scree or wall.

Phlox subulata will make an endless carpet in an alpine meadow. There are many variations and hybrids available and one's own self-sown seedlings will offer a range of color.

Species tulips come in many colors and seem to live forever. Yellow *T. tarda* and red *T. linifolia* are low enough that they shouldn't upset the purist.

Dianthus caesius offers colors from white to pink shades. Its evergreen

foliage contributes a handsome mat of silvery blue throughout the year.

Dicentra eximia, particularly *alba* or Purity, gives bloom for the entire growing year. It is excellent for a shady garden and does well in the shade of a rock in a sunny garden.

Draba sibirica repens forms a low tight evergreen mat covered with yellow flowers in April and often again in the fall.

Veronica prostrata, when in bloom in May, reminds me of a blue doily that provides a good dark ground cover until snow.

Campanula Wedgewood will give you blue or white from late May and usually into July.

While spring is the colorful time for most alpines, summer and fall are their green foliage period. Too often summer and fall are neglected for color. For these seasons, I wouldn't be without such colorful plants as Dahlborg daisy *Thymophylla tenuiloba* (Park's Seed Co.). While an annual, it has self-sown for me for the past three years. Portulaca and Floral Carpet snapdragon are two other reliable bloomers and self-sowers. *Dianthus* Bravo is a good scarlet perennial, but I find it safer to treat it as an annual, sowing additional collected or purchased seeds each spring. If you have shade, don't omit the dwarf or elfin impatiens. These annuals will give you summer and fall color.

For fall blooming perennials, my favorite is *Gentiana scabra saxatilis.* This marvelous, prolific blooming blue gentian often lasts to Thanksgiving and readily self-sows. *Erica tetralix mollis* gives an October and November pink bloom.

Azalea mums or cushion chrysanthemums are a burst of color and a strong accent in the fall garden. *Sedum lidakense rosea* (more compact than *S. sieboldi)* has a rose color bloom and interesting round succulent gray-green leaves.

Unfortunately, many rock garden plants are not available in nurseries. The best way to find a source of such material is to join the American Rock Garden Society* which has an outstanding seed exchange (sale) each year and the local chapters have one or more yearly plant sales.

continued

*Contact: Julie Morris
Secretary, Delaware Valley
Chapter, ARGS
Pennsylvania Horticultural Society
325 Walnut St., Phila., PA 19106



1. *Ilex crenata stokes*
2. *Pinus mugo mughus*
3. *Festuca ovina glauca*
4. *Iris pumila*
5. *Colchicum autumnale album*
6. *Viola variegata*
7. *Chamaecyparis pisifera squarrosa nana*
8. *Azalea mollis*

The rock is used as an accent in an alpine meadow planting.



hers

by Anita Kistler

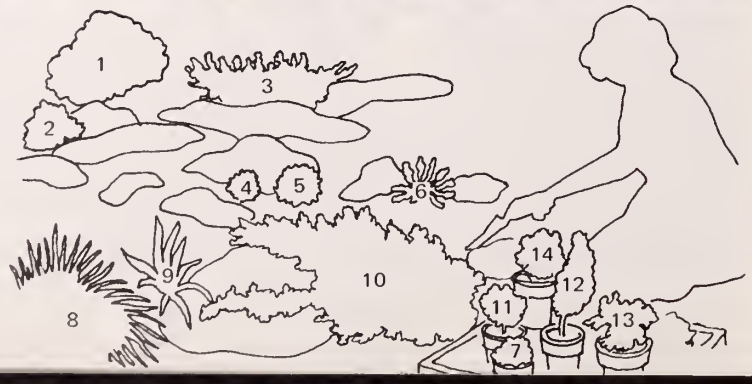
I don't collect stamps, Hummel figurines, or old samplers. These collectibles, once you own them, are yours to enjoy and display. Not so with my collection. My collection is just as challenging, but much more demanding and frustrating. I may congratulate myself on ownership today, and tomorrow a plant may be on my wish list for the third time. A slug or cut-worm may have feasted last night; I may have forgotten to water a pot; too much rain, too much sun. There went that prized possession.

I collect rock garden plants. These plants require special growing conditions as well as special locations in the garden.

Drabas are tiny "bun" plants that fall into the collectible category. I bought several and grew quite a few from seed. Having read some of the English rock gardening books, I planted the drabas in a well-drained, but cool root-run location in full sun. They grew well through the lovely days of May, then came a hot spell in June. One by one they turned brown and

Anita Kistler's garden is designed for sun-loving, bun-type plants.

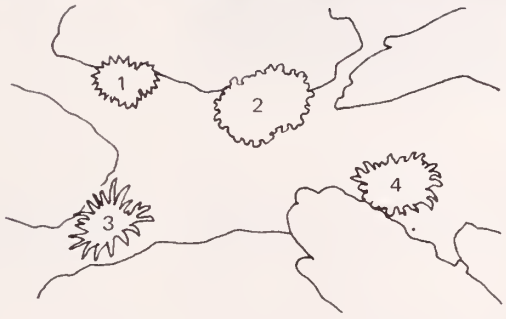




1. *Buxus microphylla compacta*
2. *Dianthus sp.* dwarf
3. *Gentiana scabra saxatalis*
4. *Draba alpina*
5. *Chamaecyparis obtusa nana*
6. *Lewisia cotyledon*
7. *Saxifraga umbrosa*
8. *Sisyrinchium campestre*
9. *Gentiana gracilipes*
10. *Hypericum fragile*
11. *Picea mariana nana*
12. *Juniperus communis compressa*
13. *Cotoneaster cooperi*
14. *Chamaecyparis obtusa nana* 'Verkades'



tail from Anita Kistler's garden.



1. *Draba alpina demissorum*
2. *Chamaecyparis obtusa nana*
3. *Dianthus nitidus*
4. *Saponaria caespitosa*

died. The light began to dawn; English books do not apply to the Delaware Valley. English gardens are several latitudes north of Pennsylvania. (We are on a parallel with Madrid, Spain, and the heel of Italy.) So I had to start all over again.

The drabas (Whitlow Grass) are tiny plants that grow on the mountain tops of the Northern Hemisphere, the Alps, the Himalayas, the Rockies. Locally, we have the *Draba verna,* an escapee from Europe, which grows in the Serpentine Barrens in southeastern Pennsylvania and in the New Jersey Pine Barrens. They are not grassy in appearance, so the common name gives little clue to their appearance. They start life as a single tight rosette and increase by rosettes; the cushion gets bigger and higher, but seldom grows more than 4 in. In earliest spring, a quick tour through the rock garden will disclose one or two little yellow, four-petaled flowers just opening. These flowers are collected into a tiny head coming out of each rosette. As the plant increases in size, the number of blooms increase, until it becomes a mound of yellow or white.

The showiest of all the drabas is *Draba dedeana* with white flowers, large for the size of the mound. Some drabas are furry-grey, others a shiny green, and many have a prickly appearance from the hairy edges of the individual leaves. Unfortunately there are many ugly drabas, some have a loose rosette, but one of the uglier ones has a 4 in. stem with tiny white flowers no bigger than a pinhead at the top. When these germinate from seeds that sound so fascinating in the catalog, I get ruthless and throw them all out. I say this with tongue in cheek though, because for four successive years I have planted seed from four sources (one in U.S.A. and three from overseas) of

continued

a *Draba loiseleuria*. The plant *Loiseleuria procumbens* is a dear tiny, creeping azalea—2 in. high at most—that inhabits the top of the eastern White Mountains and the mountain tops of the Northern Hemisphere. It has gorgeous little bright red buds that open a lovely soft pink about ¼ in. across. I thought a draba so named had to be comparable. Not so. It is one of the loose rosette type with a 4 in. stem topped by white microscopic blooms, not even visible from a distance of 12 in.

This past summer was disaster for another of my treasures. *Draba mollisima* is a tiny grey furry mound, not more than one inch high. The yellow blooms are huge for the size of the plant. The rains came all spring and part of the summer. Moisture was trapped in the hairs on the leaves, rot set in; that was the end of the plant. On the mountains the plants are nestled part of the day in the shade by nearby rocks. If you have ever been on a mountain top, you know there is a constant flow of air, quite brisk at times. When a low cloud leaves its moisture on the foliage, the wind soon dries up the moisture. I do not have such a breeze in my rock garden so I lost another of my collectibles. But next winter will bring the seed lists again!

Before I leave the topic of drabas, I should say that I have about 18 species of drabas growing well, and each year I try to add more good ones. Some will end on the compost heap because of my selectivity, and others will land there because I goofed. I try each one in two or three different locations in the rock garden to find a spot that pleases each species.

Not all the plant families for the rock garden are difficult. There are hundreds that are easy; some are aggressive and cover my little treasures. *Phlox subulata* can swallow up a square yard in two growing seasons, while *P. subulata australis* is a mature plant at 12 in. across. It covers itself with pink bloom in the spring, so is a very showy plant. *Campanula carpatica* is a lovely plant, but it can quickly cover an area of 24 in., so why not try *Campanula carpatica pumila,* the same size bloom, but the stems are compressed so the plant stays compact. *Campanula portenschlagiana* has a name that is almost bigger than the plant, but a more floriferous plant is hard to find. It stays a nice sized plant and this year has given a lovely fall bloom.

Most of your rock garden plants are perennial. Most are evergreen, so the rock garden remains a pattern of greens, greys, and reddish greens over the winter months after the summer bloom. In my smaller scale garden, I cherish several annuals that are "in scale." The easiest is the winter hardy *Androsace lactiflora*. When I first got the seed list from the American Rock Garden Society, I almost closed my eyes and dropped a pencil to select the seeds I wanted to try. Fortunately *Androsace lactiflora* was from that first selection, and has been with me ever since, self-seeding. It starts blooming in late April and continues until the beginning of June. (Never tear out the dying plants until they have ripened their seed.) Then in mid-August little rosettes appear; they are next year's plants, all self-sown. The bloom is white with a yellow eye. When it starts blooming the stem is about 2 in. high, as more and more flowers in the umbel open, the stem grows to 6 in.

Another tiny annual is *Gypsophila muralis*. In May, a tiny grass seems to be growing in the rock garden. Be careful or you may weed it out thinking it is grass. In early July it starts blooming with 3/16 in. pink blooms. As the seasons progress the number of blooms increase and the plant grows into an airy little plant about 4 in. high and 6 in. across; it continues to bloom through the first frosts almost up to Thanksgiving Day.

The number of plants that I can collect are endless. Each year as the seed lists come through the mails, my wish list becomes bigger and bigger, and as a result in the spring there I am, digging up more grass areas to make more rock gardens for my collection. ●

John S. Kistler received a bachelor of landscape architecture degree from the University of Pennsylvania in 1940. He has been a practicing landscape architect since then, designing residences, industries and parks. He also taught landscape architecture at the Arboretum of the Barnes Foundation between World War II and the Korean War.

Kistler did the rock garden at the Barnes Arboretum, the cactus garden at the Morris Arboretum and is working at present on a south section of the Tyler Arboretum.

Anita Kistler graduated from the University of Pennsylvania with a bachelor's degree in architecture. She is vice president of the American Rock Garden Society and a member of the Valley Garden Club, Alpine Garden Society of England, Sempervivum Society of England, and the Alpine Garden Club of British Columbia. In addition she is working on the Wherry Memorial Garden at the Arboretum of the Barnes Foundation. She is secretary-treasurer of the Garden.

1. *Fatsia japonica,* an indoor plant.



photos by Edmund B. Gilchrist, Jr.

by Ernesta D. Ballard

Ernesta Ballard is the president of the Pennsylvania Horticultural Society. She and her husband, Frederic L. Ballard, a contributor to *The Green Scene,* grow hundreds of plants in containers. Mr. Ballard is an active practitioner of the art of bonsai growing.

Ms. Ballard's book, *The Art of Training Plants,* published in 1962, was one of the first on the subject of bonsai written by an American. It is out of print, but the publishers have announced their intention of issuing it in paperback in the coming year.

air layering

Every horticultural treatise says that air layering is a useful method of vegetative propagation and tells how to do it. Liberty Hyde Bailey's classic *Cyclopedia,* defines a layer as a stem that is made to take root while still attached to the parent plant. He states that layering is practiced only with plants that do not root readily from cuttings, and that the various layering techniques all involve notching or girdling a branch and bringing the exposed cambium into contact with a favorable growing medium. The easiest method with thick, hard-barked species is to bury the girdled section of the branch in the ground; this process is known as **layering.** When the branch cannot conveniently be brought to the ground, a substitute growing medium is brought to the branch and wrapped around the girdled section; this process is known as **air layering.** Bailey says it is also called Chinese layering or circumspection.

So there is nothing new about layering. Every horticulturist knows something about it. But, oddly enough, comparatively few try it, and fewer still

continued

air layering



2. *Fatsia japonica.* Many old leaves have dropped off leaving the stem bare. Note new growth at base of the stem.



3. The bark is scraped away for an inch all around the trunk. The new roots will form on top of the bared place.

fully appreciate how convenient the practice can be in the management of a collection of plants. My purpose here is to suggest, through four examples, what can be accomplished by this ancient and quite simple technique. The examples are taken from my own experience.

Fatsia japonica. This plant is native to the semitropical part of Japan and is commonly grown as a houseplant in the northern part of the United States. (It is one of the parents of the popular houseplant, *Fatshedera lizei,* an intergenetic hybrid, the other parent being the common ivy, *Hedera helix.)* Figure 1 shows my fatsia when it was about 10 years old and in full and luxuriant foliage.

Figure 2 shows the same plant two years later. You will see that with the passage of time it has lost the lower two-thirds of its leaves and become leggy. A new basal shoot has appeared, but it will be several years before it will take the place of the lost leaves. The plant is clearly a candidate for some treatment to make it lower and more compact.

The simplest thing to do in the case of a semitropical species such as this would be to cut the stem a little below the desired height and wait for buds to break out below the cut, as they surely will. That treatment will rejuvenate the present plant, but what about the top with its fine crown of mature leaves? Wouldn't it be possible to save that and make a new plant? Over the years, I have had many calls from people who want to do just that—with dracenas, diffenbachias, fiddle-leaved figs and other large-leaved plants, which are almost impossible to root in the regular manner.

The way to save the parent plant and at the same time make a new plant out of the top is to air-layer the stem before cutting it, so that when the top is removed it already has roots to support it. That was what I did in this case.

My first step (Figure 3) was to girdle the stem where I wanted the roots to form by removing a strip of bark and cambium about one inch wide all the way around. I then covered the wound with thoroughly damp (but not dripping) sphagnum moss an inch or more thick extending two or three inches above and below the cut (Figure



. Damp sphagnum is applied to the wound.

5. Polyethylene is wrapped around the moss and sealed with tape.



Mr. Yoshimura had said that the tourniquet method was slow but sure . . . It was more than three years before the roots appeared.

6. Three months later, new roots have formed.



4); wrapped it in polyethylene plastic film and fastened the film in place with electrician's tape (Figure 5). The function of the film is to retain moisture and prevent the sphagnum from drying out. The film and the tape should be applied carefully and neatly, but it is not necessary to make the cover absolutely watertight.

I performed the operation in June, spring being the recommended season for this procedure. In September I could see white roots developing under the plastic film. Figure 6 shows how they looked after the plastic was removed.

The next step is to sever the newly rooted section (called the "layer") from the old plant. However, before doing so I removed 10 of the oldest leaves from the crown, reducing its foliage by

continued

air layering



7. Before the new plant is severed from the old, 10 or 12 of the lower leaves are removed.



8. The cut is made.



9. A new plant is made.

about one-third (Figure 7). This is important because when the layer is severed it has only the newly formed roots through which to absorb water and nutrients. This small root system cannot be expected to support a full and luxuriant crown.

Figure 8 shows where I made the cut to sever the layer from the old plant. You will see that I left a four- or five-inch stub below the roots so that there would be firm support to plant in the pot. When the root system has fully developed, this stub can be removed.

Figure 9 shows the layer potted in a Japanese container. I think you will agree that it is already a handsome plant. The only special care it received was to be kept out of the sunlight for about a week. It never lost a leaf, and



10. *Malus* 'Red Jade' showing the large root stock onto which the plant was grafted to make it strong, hardy and disease-resistant.

11. *Malus* 'Red Jade' with air-layer in place.



began to put out new growth by the end of December. A most successful operation.

As for the old plant, five months after the severance, it had a well-developed growing point about two inches below the cut and several swelling buds below that. Given a full growing season, it should again be ready for display.

Malus X 'Red Jade.' A weeping crabapple developed at Brooklyn Botanic Garden.

Acer campestre. English hedge maple, probably a dwarf variety. In these second and third examples, we used an air-layer to solve a problem which every bonsai grower will recognize—the problem of the grafted tree. *Malus* X 'Red Jade' and *Acer campestre* are both handsome small trees, well suited to bonsai training, except for one drawback. Like most dwarf and compact varieties, both are normally propagated by grafting. That means that there is a discontinuity and usually an ugly scar at the base of the trunk where a cutting from the unusual plant to be propagated (known as the "scion") is united to a normal root stock. The obvious way to eliminate this unsightly union is to layer the tree above the graft and force the scion to grow on its own roots.

Figure 10 illustrates the problem perfectly. It shows a vigorous, container-grown specimen of 'Red Jade.' It also shows the ungainly root stock onto which the scion has been grafted, as well as the circumferential scar at the point of union. The tree itself is an excellent candidate for a bonsai in the "weeping branch" style, but no bonsai fancier could tolerate that bole.

We discussed the problem with Yuji Yoshimura, a bonsai grower of vast experience and the first teacher of many of us here in the Delaware Valley. He unhesitatingly recommended layering; however, he suggested that in the case of a tree of that size and age, it may be safer to apply a tourniquet instead of girdling the trunk. His idea was that the tourniquet cuts through the cambium gradually as the tree expands, allowing more time for the roots to develop. Girdling the more fragile species severs the cambium immediately and might kill the top before the roots could form.

Following Mr. Yoshimura's advice,

continued

air layering



12. *Malus* 'Red Jade' showing strong new root system above the grafted root stock.



13. *Malus* 'Red Jade,' a pre-bonsai.

which is well explained and illustrated in his book *The Japanese Art of Miniature Trees and Landscapes,* we applied a tourniquet consisting of a single strand of wire 1/8-3/16 of an inch in diameter comfortably above the graft. We twisted the wire ends with pliers until the wire began to draw noticeably into the bark; then we applied the sphagnum and plastic film, planted the tree in our bonsai bed (as shown in Figure 11), and waited.

Mr. Yoshimura had said that the tourniquet method was slow but sure, and that proved to be the case. It was more than three years before the roots appeared. In the meantime we had replaced the sphagnum and plastic several times, mostly because we were curious to see what was happening. All we learned was that it took a year for the scar tissue known as callus to form and two years after that for the first roots to emerge.

At this point, Mr. Yoshimura's instructions were not to sever the layer at once, but instead, to dig a deep hole and sink the tree into it so that the newly-formed roots would be just below ground level where they could develop naturally in the topsoil.

A year later we carefully dug up the entire plant and found a most satisfactory root system to support the layer (Figure 12). We sawed off the stem below the new roots and potted the layer in a bonsai container. After two growing seasons and some preliminary training it has begun to take on the appearance of a bonsai (Figure 13). In all, it took six years to get rid of that ugly trunk, but what is six years to a bonsai that may live for a century.

The story of the English hedge maple is almost the same. Figure 14 shows the trunk with the sphagnum and plastic over the tourniquet. The graft scar can be seen just above the mass of roots, which are growing out of the root stock. Figure 15 shows the same scene with the plastic removed to reveal a few white roots protruding from the sphagnum. As in the case of the crabapple, the time between layering and root formation was three full years.

Figure 16 shows the tree being lowered into the deep hole, with the

In all, it took six years to get rid of that ugly trunk, but what is six years to a bonsai that may live for a century.



14. *Acer campestre*



15. *Acer campestre*

new roots at ground level. Figure 17, taken a year later, shows the layer severed from the old trunk, planted in a container, and ready to become a bonsai.

Picea abies pendula. Here is another application of layering. This attractive and unusual weeping form of the Norway spruce is not always readily available from nurseries, and when it is available, is almost always grafted.

I greatly admired the venerable pair shown in Figure 18, which stand on either side of a pool in the garden of a house where I lived for 15 years and where my husband was born. The desire to have a growing piece of it was irresistible. The fulfillment was an air-layer, with the result shown in Figure

continued



16. *Acer campestre*

air layering

17. *Acer campestre* potted and growing on new roots.





18. *Picea abies pendula*



19. *Picea abies pendula.* A new plant made by air-layering

19. Again we used the tourniquet technique, but this time the roots appeared after only two years, doubtless because the layered stem was much smaller and younger than in the case of the crabapple and the maple.

Over the last five years we have layered four or five other hardy trees, some with diameters as large as two inches. The species include apple, a Texas elm, an American hornbeam and a number of junipers. All layers were made with tourniquets and all were successful. I have also layered a variety of tropical and semitropical woody plants by the girdling method, again with complete success. Layering is, indeed, a versatile and convenient horticultural technique.

●



photo by Carole Bell

digging for information

HORTICULTURAL CORRESPONDENCE

by Ed Lindemann, horticulturist

unlighted bathroom

Plant growers have long recognized that what works for one person does not necessarily work for another. I think the following letter proves that point. It is in reply to a letter that we published (The Green Scene, *January, 1974) asking for a suggestion for a plant to grow in a bathroom without any light. I answered that there was no such plant. I found this letter interesting and thought you would enjoy it also.*

Ed Lindemann, horticulturist

Strange as it may seem, I have a sansevieria thriving in my unlighted bathroom. I have had it there for the past two years. During that time it has been knocked out of its pot with most of its roots broken, and often I forget to water it since it is not with the rest of my plant collection. In spite of the neglect, the plant thrives and has several times sprouted new shoots. Evidently the extra moisture in the bathroom and the artificial light it receives when the room is being used are sufficient for the plant to survive.

G.N., Philadelphia, Pa.

cyclamen

Q. I received a beautiful cyclamen as a gift. In only a few days the plant started to dry up. I have kept it well watered and it receives indirect light. What am I doing wrong?

Mrs. F.B.M., Philadelphia, Pa.

A. Cyclamen often starts to decline when it is brought home from the florist. Change in conditions from a cool greenhouse to a warm dry heat of a home is often too much for it. If you have a cool, sunny window or an unheated sun porch you will have better luck with cyclamen. If the plant must be kept in a warm room it will not last as long as it would under cool conditions.

Cyclamen grows from corms, which are similar to bulbs. After your plant has died back, store the pot with the corm in it in a cool dry place for the summer but water occasionally, maybe once every two weeks or so. Late in the summer or early fall bring the pot out into the light and resume watering and feeding; the plant should bloom next winter if you have good luck.

carnations

Q. I have perennial carnation plants that are very full and bushy right now; however, the birds are eating all of the leaves. The plants all look as if they had been given a brush haircut. The same thing happens to my small spring bulbs: snow drops and crocuses. What can I do to keep the birds from eating them? The bird feeder is nowhere near the plants.

M.A.K., Philadelphia, Pa.

A. From your description, I believe it is the rabbits, not the birds, that are attacking your plants. I suggest that you use one of the commercial rabbit repellents on the market to see if it will correct the problem. If you don't wish to use the repellent, the plants could be covered with a wire protective covering made out of chicken wire or window screening.

scale and dieback

Q. I have enclosed cuttings from two formally clipped yew bushes that are about 20 years old.

One plant has turned completely brown within the past three months. Both plants also have yellow spots about 6-8 in. across; that problem started two years ago. Can you tell me what the problem is?

G.P.G., Villanova, Pa.

A. Your taxus plants seem to be suffering from several different problems.

Some of the branches show a slight infestation of scale. To control it, I suggest that you apply the Superior type dormant oil spray while the plants are dormant in early spring when the temperature is well above freezing. In May and again in June spray with Malathion or Sevin.

The most common problem with yews is dieback. The plants turn yellow at the growing tips; that is followed by yellowing throughout the plant, wilting and death. Several months may elapse from the time the first symptoms appear until the plant dies. The symptoms below the ground are the decay of the bark on the deeper roots. The problem usually occurs because the soil is too acid and often is poorly drained. Try to improve drainage of the soil and add ground limestone after running a soil test (which can be done for a $2.00 fee through Agricultural Extension Service). The pH should be approximately 6.5 for yews.

nandina domestica

Q. I was quite entranced by the holly that you had at a recent exhibit on the first floor at PHS. It had a tiny thin leaf, and was dark green. Can you tell me what it was and where I can get one?

Mrs. L.W.S., Mt. Holly, N.J.

A. I believe the plant that you are trying to identify was not a holly, but *Nandina domestica.* Nandina has slender leaves 1-1½ in. and they are long and dark green. The fruit is brilliant red and appears in clusters.

Nandina is not hardy in our area, but grows throughout the southern states and on the Pacific Coast. If you have a very protected area you may successfully grow the plant in our climate. I suggest that you contact nurseries in the Washington and Virginia area. ●



dried & true:

COLLECT NOW FOR DRIED ARRANGEMENTS

While dried flower arrangements are associated with the autumn harvest, collecting materials for drying and pressing is almost a year-round project requiring careful spring planning and planting.

Browsing through the Library's expanding collection of books on preserving natural materials will help you to decide on a plan for growing or obtaining the kinds of plant material you will need to create dried arrangements and pressed flower pictures.

When I started looking through the two dozen or so books on the subject, I was surprised by the variety of techniques. Each author has developed her or his own favorite drying methods.

The Decorative Art of Dried Flower Arrangements, by Georgia S. Vance, illustrates each of the major historic periods with examples of her own dried arrangements. The history is complete from the Renaissance Period through Colonial American designs and their influences. Modern floral art in abstract and free styles are effectively illustrated as part of the continuum of flower arranging history.

Vance is one of the few authors who tells where and how present techniques developed. For example, glycerine, first produced in 1799, has long been used as an agent for preserving foliage; the sand drying method was first mentioned in print in December 1788 by Matthew Carey in Philadelphia.

A planting list for a garden at Mount Vernon includes plants for kitchen and flower gardens. Vance helpfully uses common and botanical names for those who would like to plant some of the flowers used 200 years ago.

The clear and good-sized photographs in the book illustrate step-by-step the techniques Vance uses to dry her flowers. The recommended methods section covers 155 varieties of plants and how best to preserve each.

Her chapter on transporting arrangements should be very helpful to flower show exhibitors.

Blue Cattails. In Lewis Carroll's *Alice in Wonderland* the knaves paint the roses red, perhaps inspiring the author of *The Art of Dried and Contrived Flower Arrangements.* Author Esther Hamel not only suggests painting cattails blue but suggests some other techniques that may have friends questioning your sanity if you try them. Hamel's book is clearly illustrated.

If you follow the "recipes" for some of Hamel's contrived flowers, you will be drying banana peels on your sidewalk or any handy cement surface, baking orange peels, letting your lemons mold, peeling honeysuckle branches and drilling holes in strawberry popcorn. This section is one of the most intriguing and unique parts of the book, so save your banana peels.

The use of Day Glo-sprayed materials might not be in everyone's arranging scheme but some of the results are very effective.

A handy "goop" (art dough) recipe with three variations is given for making tiny fruits, vegetables, and flowers. Some good suggestions for creating natural textures are provided along with the recipes. "Goop" strawberries are rolled in mustard seeds, avocados in grits, and oranges on a needle frog. Cloves make good stems and color is applied with melted crayons, shoe polish or paint. Hamel wisely suggests that flower show schedules be checked for the acceptability of the contrived materials.

Hamel's book covers much more than contrived floral art. All the best methods for flower and foliage preservation are described. Plant and method lists are complete.

The section on the best techniques to use with each color will help you to avoid disaster. Color alteration is carefully described since the processes in coloring material are tricky; painting, chalking and dyeing are a few of Hamel's methods. Other special processes such as shellacking, crystal dipping, glassing, waxing and more are covered.

Standard dried arrangement techniques are certainly not forgotten. One of the many photographs included is of





an arrangement by PHS member Mrs. H. B. King (see *The Green Scene,* p. 9, Nov./Dec. 1973).

Egyptian Tombs. Dried roses in an Egyptian sarcophagus led Geneal Condon, author of *The Complete Book of Flower Preservation,* on a search to discover the origins of drying and preserving plant material. Condon found tales in 14th century Indian literature describing dried plant material as well as examples in the art and literature of 15th century Europe.

Condon has her own definite preference for a drying compound, oolitic sand, found only on the shores of the Great Salt Lakes in Utah. This would be an impractical material for most of us if it wasn't available by mail from Flower Preservations, Inc., P.O. Box 1543, Salt Lake City, Utah 84110.

Condon describes all of her research methods step by step, saving us much trial and error work. She includes a teacher's manual, a boon to coursegivers.

Emily Brown has written *Flower Arrangements that Last,* a book covering all kinds of plant material, fresh and dried. The book is useful in its color photographs illustrating many styles of arrangement. The list of dried materials found for sale will help the non-gardening arranger enormously.

Betsey Creekmore's *Making Gifts from Oddments and Outdoor Materials* has excellent instructions for making pine cone flowers. You won't end up with broken fingers and ruined clippers if you follow her method.

Books about pressed flower pictures are few but fine. The book by Booke (Ruth Voorhees) is basic and good. Techniques for collecting and handling material from the first oak leaf in spring to the last chrysanthemums in fall are thoroughly described. What is missing in Booke's book are good photographs of the finished pictures.

The two books, *Pressed Flower Pictures* and *Pressed Flower Collages,* by Pamela McDowall have beautiful photographs, many in color. Her thoughtful and thorough text is also illustrated with her pressing techniques that take the mystery out of the method. Abstract, traditional and whimsical products of her art will be good inspirations to flower show hopefuls. The little creatures in the collages, rabbits, birds, and cats, will make you want to start collecting immediately.

You should begin gathering and processing material immediately for the coming fall. It's time now to start working on the spring flowers from your trees, shrubs and flower beds—and don't forget the blue cattails. Call the Library and ask that one of the books on dried materials be sent to you, or stop in and choose one yourself.

reading list

Pressed Flower Pictures and Citrus-Skin Decorations
Ruth Voorhees Booke
Van Nostrand, 1962

Bouquets that Last
Emily Brown
Hearthside Press, 1970

The Dried-Flower Book; A Guide to Methods and Arrangements
Nita Cox Carico
Doubleday & Company, 1962

The Complete Book of Flower Preservation
Geneal Condon
Prentice-Hall, 1970

Making Gifts from Oddments and Outdoor Materials
Betsey B. Creekmore
Hearthside, 1970

Creative Designs with Dried and Contrived Flowers
Esther Veramae Hamel
Simon & Schuster, 1971

Pressed Flower Collages and Other Ideas
Pamela McDowall
Scribner, 1971

Pressed Flower Pictures
Pamela McDowall
Scribner, 1969

The Art of Drying Plants and Flowers
Mabel Squires
Bonanza Books, 1958

The Complete Book of Dried Arrangements
Raye Miller Underwood
Barrows, 1952

The Decorative Art of Dried Flower Arrangements
Georgia S. Vance
Doubleday, 1972

●

by Julie Morris

drawings by Julie Baxendell

however you spell it, Wisteria means May



W. floribunda alba

"Some say potăto and some say potāto; some say tomăto and some say tomāto," goes the old song. We might add another verse for that nostalgia-evoking vine, wisteria. Some spell it wistEria and some spell it wistAria, and therein lies an intriguing bit of Philadelphia history that goes back to the early days of the Republic. Like the vine, history has sent out long tendrils that reach to the present day; for this ubiquitous vine of gardens from Maine to Georgia, the pendulous flower of oriental landscapes and occidental Victoriana, was named for a member of a famous Philadelphia family whose progeny are still extant.

But before we trace the labyrinthian path of nomenclature, let's enjoy the plant for itself, as beautifully manifested in the Sinkler Walk at the Morris Arboretum in Chestnut Hill. Some 38 vines are trained on a double row of husky wooden pillars for 200 ft. of deliciously scented ambulation. The gift of a Morris benefactor, the late Mr. Wharton Sinkler, 15 varieties of *W. floribunda* were planted in the spring of 1938. Sadly, years of war and subsequent neglect due to a diminishing pool of groundskeepers allowed shoots from the parent stock to develop and eventually to crowd out some of the varieties. Joe Adams, formerly curator of the Arboretum's Herbarium, happily is back on the staff after an absence of 22 years, identifying and tagging the surviving specimens. He prays funds will be forthcoming to make the collection once again truly comprehensive. What happened at the Morris can happen in the private garden, warns Adams, who recommends choosing a plant propagated from layering rather than a graft, unless care is taken to prune out any suckers from the roots. If that is understood, a graft plant has the

MORRIS ARBORETUM
9414 Meadowbrook Ave. • Phila. • PA 19118
Ch 7-5777

advantage of leapfrogging the years, since wisteria, a long-lived plant, can take up to 15 years to bloom. The Sinkler Walk, however, is still a memorable experience. Situated just above the new cactus garden, it is laid out on two levels of carefully clipped lawn, and leads up a gentle slope to form a gateway to the rose garden.

Well, what about that name? Why the alternate spelling? Evidence points to one Caspar Wistar of Philadelphia, 1761-1818, as the man for whom wisteria is named. He was Dr. Wistar, anatomist and teacher of such popularity and fame that he drew students from all over the young country. The Wistar Institute also memorializes him. Why would a doctor deeply committed to his field be recognized in the botanical world? Like so many 18th century scholars, his interests were extensive, involving him in correspondence with some of the great minds of the western world, and his home was a salon where the intellectuals of the day met to exchange ideas.

One of Dr. Wistar's correspondents was the noted botanist the Abbe Correa da Serra, who probably discovered and named the American species of wisteria for his Philadelphia friend.

But was it Caspar Wistar? One cannot help but wonder about the doctor's cousin, Charles Wister (of the family branch spelling the name with an E). Charles was a botanist, builder of Grumblethorpe, the family home in Germantown until the last inhabitant, another Charles Wister, died there in 1910 at the age of 90. While the house is maintained and open to the public, the gardens crumbled from years of neglect.

The family zealously guarded the spelling of the name on each side, but they were less careful with evidence documenting the origin of the wisteria nomenclature. A Dr. Thomas Wister, in a letter written in 1914 to a family biographer, says of wisteria and his great-uncle Caspar that "there is not the slightest doubt" of the origin of the name. But, he adds, neither is there a shred of evidence to bear out what he called a "fixed and positive tradition in our family" that the Abbe named it for Caspar. Some authorities credit the name to the botanist Thomas Nuttall, also a friend of both Wister and Wistar. To muddle the mystery still further, however, Nuttall himself spelled it with an E but wrote that it was named after the doctor!

A botanist Wister of our own day, John C. (for Caspar) Wister of Swarthmore, comments that botanists are forever perpetuating mistakes, freezing them into the nomenclature permanently. A good example of such inconsistency is the several varieties of plants described as pensylvanicum—spelled with one "n".

Home gardeners have their choice as to spelling but should familiarize themselves with the two principal species of wisteria: floribunda, the Japanese wisteria hardy as far north as Vermont and New Hampshire. It has a large color spectrum through the pink to blue and lavender, as well as white, and is considered the most fragrant. Its panicles are remarkable for their length, growing to 4 or even 5 ft., under optimum conditions. The individual flowers do not open all at once, however, so they are not as showy as *W. sinensis,* the Chinese species. Sinensis is perfectly hardy in Philadelphia but is less hardy than *W. floribunda.* It blooms before the leaves open and has graceful flower clusters to one foot in length. There are two American species that need only passing mention here: the Kentucky wisteria, *W. macrostachya,* native to the swamps of Illinois and Arkansas; and *W. frutescens* (speciosa), which grows wild in the deep south.

Chinese varieties of merit are 'Jako,' known for its fragrance; Alba, a white variety; and 'Blue Empress,' which has, as one might suspect, blue flowers. The parent is lavender blue.

Floribunda has been widely hybridized and boasts a number of superlative varieties. Among the most highly recommended are v. Issai,* a deep purple with silky seed pods which hold all winter; a blue flowered one called 'Geisha'; rosea,* a pink variety, and an improved strain of that, *v. rosea superba.* 'Nago Noda' is a very fragrant purple with a reddish tint; v. longissima has extra long racemes of lavender. It also comes in a white version: v. longissima alba.* 'Kuchi Beni' has white flowers with purple innards, and *v. violacea plena* * is a double dark violet with racemes 18 in. long. 'Royal Purple,' finally, is descriptive of its deep purple flowers.

Gardeners should be aware of some of the pitfalls that can be encountered in this otherwise desirable vine: it takes careful pruning, rich soil deeply cultivated, plenty of water in the summer months, and, for proper bloom, full sun. Not only does it take a long while to bloom, but it may refuse to bloom entirely. Most garden books have detailed solutions for that condition. And finally, after wisteria is launched, it can be hard to turn off, like the famous Charles Addams cartoon of the vine lapping the house yet again. It needs strong, non-rotting support at the outset. Don't grow it on a tree you favor because it may well strangle it.

Wisteria is also frequently trained to great effect as a standard; the practice nips a great many potential problems in the bud. But for the devoted gardener, May would be a poorer month without the fragrance of wisteria, the unrivaled beauty of its flowers and the hum of the bees attracted to its nectar.

●

by Ellen V. P. Wells

*Planted at Sinkler Walk.

The Sweet Bay...Magnolia Virginiana

Those who wander through the little valley below Lachford Hall at the Tyler Arboretum find themselves among the trees and shrubs that remain from those planted by the brothers Minshall and Jacob Painter more than a century ago. We call this area the old arboretum. If the time be May or June, there should be flowers on the two trees of *Magnolia virginiana,* variously called sweet bay, swamp bay, swamp or laurel magnolia, or beaver-tree. It has also been known as *Magnolia glauca,* because of the silvery bloom on the underside of the leaves.

One of these trees is below the barn, near a large spruce, and the other is at the northeast end of the retaining wall in front of Lachford Hall. In addition to these ancient trees, there are three young ones near the ponds, and two to the right of the road as you approach the North Woods, walking directly from the ponds.

The flowers of the sweet bay are 2 to 3 in. across, creamy white, globular, and delightfully fragrant. They do not give the magnificent show that is put on by the earlier-flowering saucer magnolias, with their huge cups of white to rose and purple, borne in thousands on leafless boughs. They bloom after their foliage is fully grown, and the flowers open over a period of several weeks. Sometimes a lingering flower or two may be found in July.

The foliage of the sweet bay is more attractive than that of its early-flowering kin. The leaves are slender ovals about 4 to 6 in. long, and one inch to 3 in. wide. Their upper surfaces are shining bright green, and the undersides are dull and silvery, almost white. They do not turn color in autumn until after they have fallen, when they are brown and silver, of a texture firm and supple, pleasant to hold in the hand. A few green leaves are apt to cling to the trees all winter.

The fruit of the sweet bay, like that of other magnolias, is cone-like. It is dark red, with compartments that open allowing the shining red seeds to hang out on fine filaments. The seeds are relished by birds.

The sweet bay is native from Magnolia, Massachusetts, just south of Gloucester, where it is a shrub, south near the coast into Florida, and west along the gulf into Texas. In the southern part of its range it may reach 75 ft. It is very common along the streams and in the swamps and low woods of south Jersey, and it is native, or once was, in the 15 most southeasterly counties of Pennsylvania.

Here, it is a tree reaching 25 or 30 ft., rather upright and open, often with several trunks or stems. It is a tree that can be grown peaceably with mountain laurel, azaleas and rhododendrons, the sweet pepperbush *(Clethra alnifolia)* and hollies both evergreen and deciduous. These may all be seen growing happily together in the wild in low, wet places which may mislead the gardener who considers planting them. Under garden conditions all should have good drainage. The sweet bay is amenable to light or partial shade.

There are no magnolias native to Europe, and those native to North America became known there before those of Asia. The sweet bay was noticed and commented upon as early as 1584. In 1688 John Bannister sent it to Henry Compton, bishop of London and an important patron of horticulture. Bannister was an English missionary in Virginia who sent many American plants to England.

In this country, it seems to have early won the hearts of gardeners, and it became a valued garden tree. However, the deluge of showy plant material in the 19th century, both from the Orient and as the result of plant breeding, has relegated it to a minor place.

Although its wood has no commercial value, its pale tannish-gray bark was for a while used as the basis of a drug supposed to act as a tonic and to induce perspiration and reduce fever. The lovely flowers and foliage were also, years ago, hawked in the streets of Philadelphia, along with other treasures of the Pine Barrens such as Turk's-cap lilies, trailing arbutus, and moccasin-flowers.

In addition to trees of the sweet bay at the Tyler Arboretum, there is also a small plant of its variety, *M. virginiana australis,* in the old arboretum. This variety is the most commonly found in the southern states. The leaves persist still green until spring, and it reaches as much as 90 ft., with a trunk sometimes 3 ft. in diameter.

●

THE
TYLER ARBORETUM
515 Painter Road • Lima • PA 19060
Lo 6-5431



Magnolia virginiana

by Gertrude S. Wister

GROWING ANNUALS AT AMBLER



A section of the annual garden at Temple University Ambler Campus. Groups of nicotiana, white bedder, provide the accents.

by Viola K. Anders

Viola K. Anders is an instructor in the floriculture section of the Department of Horticulture and Landscape Design at Temple University Ambler Campus. She graduated from the same institution when it was the Pennsylvania School of Horticulture for Women. Before joining the faculty at Ambler Campus, she spent eight years with the W. Atlee Burpee Co. working mostly in the plant breeding and trial ground departments at Floradale Farms in California and Fordhook Farms, Doylestown.

photo by the author

The wide variety of colors, flower forms, plant heights and habits found in the large group of annual flowers available to the gardener today offers a treasury equal to none. Growing for one season only, annuals are sometimes given second place to perennials. But with their fine flowering habits they more than repay the effort of starting them from seed each year. Select carefully and you will have months of colorful blooms. Annuals are quite versatile and can be used in many locations and for many purposes.

A section of the gardens at the Ambler Campus of Temple University at Ambler, Pennsylvania, provide just such an opportunity and challenge. The annual garden is composed of two beds, each 8 ft. wide and 40 ft. long, located along the sides of a 6 ft. grass path.

Containing only annuals, the beds are completely replanted each year. Each year the color scheme and plant selection is changed in the planting design. Some years salmon pinks, blues and whites make up the floral display in these beds. Other years yellows, creams and blues with accents of orange make up the color scheme. Occasionally, for a complete change of tempo, the bright red of scarlet sage may be featured in large drifts and contrasted with the gray foliage of dusty miller, along with soft blues and whites.

Much time and thought goes into the planting plans. Each year the plan is selected from those submitted by the horticulture students. Flower color, plant habit, height and dependability of bloom over a long period are taken into consideration in creating the plan. Accents to enliven the design are provided by contrasting color or flower form.

Separate color cultivars are preferred to mixtures. They are planted in groups or drifts of around 8 to 15 plants each, depending on the overall scale of the garden. The drifts are often repeated four to six times throughout the two beds to create an effective design.

Following is a list of some of my favorite annuals for bedding purposes where good bloom for color effect is the primary criteria. These perform well in our garden, which has a clay-loam soil containing an ample supply of humus and which holds the moisture well. They may perform differently in other soil conditions and other locations.

Ageratum sp. Blue Angel is my choice for a dwarf habit and Blue Chip for the taller, 12 in. height. Both are free-blooming throughout the season.

Antirrhum sp., snapdragon. Don't overlook the Floral Carpet class in their separate colors. They are especially nice for edging. They will be covered with bloom several times during the season if the seed stalks are kept removed.

Begonia semperflorens (Wax Begonia). Very few plants will give as much bloom throughout the season as this group of begonias. They do best in shade or partial shade in the Philadelphia area.

Browallia viscosa Sapphire. A seldom grown annual that should be used more often. It has small blue flowers on 12 in. bushy plants.

Impatiens sultana. Indispensable for the shady locations. Blooms continuously from early summer until frost.

Lobularia maritima, sweet alyssum. Good for edging. Comes into bloom quickly and performs best in the cooler weather of early summer or of fall.

Nicotiana White Bedder. Blooms well in sun and also in partial shade.

Nierembergia Purple Robe. A delicate plant but blooms over a long season and is quite lovely.

Petunia sp. Always dependable for color. The spreading plants can crowd their neighbors, so give them plenty of room.

Salvias sp. I like Pink Rouge which is a soft salmon growing around 15 in. tall. It combines well with Violet Flame which is taller. Both give a good display in late summer and fall. *Salvia farinacea,* blue sage, is also a favorite of mine.

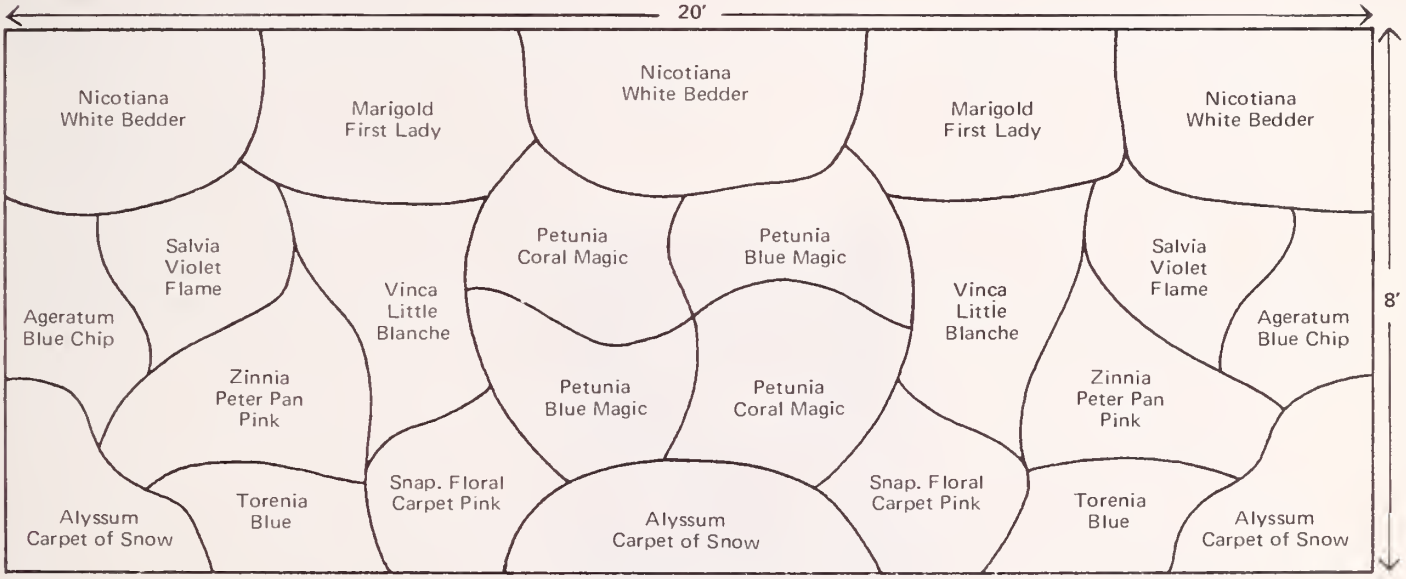
Tagetes sp. I especially like the Nugget class because of their early bloom. Their height is about 10 in. The Petite class are also good performers in the dwarf group. Of the larger flowered, taller marigolds, I prefer the Jubilee class. These are known as the hedge type and do not grow as tall as most, thus requiring less staking.

Torenia fournieri. Has interesting flowers. Does well in sun and in shady areas.

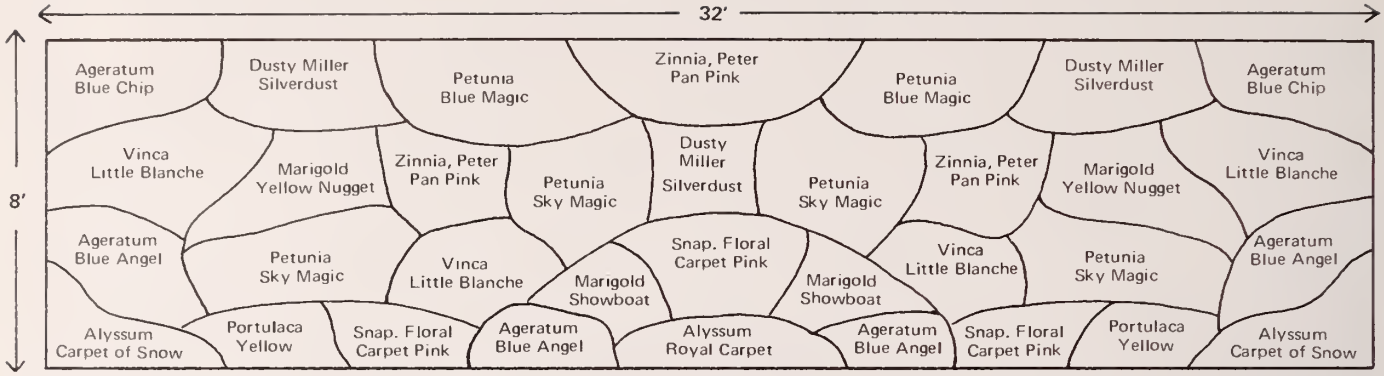
Vinca rosea Little Blanche. This annual periwinkle has a compact plant habit with pure white flowers contrasted against its shiny, dark green leaves. Does well in sun or shade. Stays neat all season.

Zinnia sp. Very little needs to be said about this well-known flower. The new Peter Pan cultivars are exceptionally fine for bedding purposes. Good size flowers are produced on 12 in. compact

continued



Plan 1. A plan, typical of that used in the Ambler annual garden, groups plants into bold drifts. The color scheme is predominately pink, white and blue. *(Plan by author.)*



Plan 2. A plan typical of those created for minimum maintenance. All plants are under 15 in. tall, thus eliminating staking. A symmetrical design in a harmonious combination of blue, pink, white and soft yellow. *(Plan by author.)*

plants. I especially like the pleasing color and the performance of Peter Pan Pink.

Our annual garden does not really require a lot of care. In the spring the beds are prepared with a tiller. Before tilling, a complete fertilizer is evenly spread over the area. This is usually 5-10-10 at the rate of two pounds per 100 sq. ft. The last several years I have used Mag-Amp, one of the slow-release fertilizers, at the rate of four to five pounds per 100 sq. ft. The slow-release fertilizer supplies the nitrogen to the plants more evenly throughout the growing season and seems to give a more uniform rate of plant growth.

The plants are grown from seed sown in the greenhouse, and the small seedlings are pricked out into flats, spaced about 2 in. apart from each other. The room to grow encourages good sturdy seedlings when ready for planting into the garden beds in early May. Proper spacing is important for the plants to develop stocky habits with branching coming from the base. Each of the smaller edging plants such as sweet alyssum, lobelia and portulaca are spaced 6 in. apart from one another; ageratum, dwarf snapdragons, dwarf marigolds, 8 to 10 in.; petunias, salvias and nicotianas, 12 in.; and tall marigolds, zinnias and cleome, 15 in.

If a greenhouse is not available, the seedlings could be started in the house or in a frame. Or, seeds of the faster growing seedlings such as marigolds, zinnias, asters, or celosias could be sown directly into the garden beds. These plants would, naturally, come into bloom later in the season. For those seedlings that require a longer growing period before coming into bloom, such as petunias, vinca, lobelia, begonias, browallia, or impatiens, it would be advisable to purchase well-developed plants at the garden markets if suitable conditions for starting them indoors were not available.

Several weeks after planting, the beds are mulched, usually with Right-Dress or some similar material. Then the plants are left to develop and bloom. Annuals usually perform better when they are not pampered. Watering is done as needed, when the soil is dry, with an oscillating-type sprinkler, thoroughly soaking the bed. By the latter part of June some of the plants begin to bloom, starting the color display that continues until frost. The later blooming plants, such as the salvias, annual vinca and the African marigolds, will not begin to bloom for another month.

During the summer, staking is done when needed and spent blooms removed to encourage the development of more flower buds and thus a longer blooming period. Occasionally some plants, such as petunias, may need their branches cut back to keep them within bounds. The few insects and diseases that might be present are kept in check as they appear.

This colorful mass of annual flowers has given much pleasure to those who wander through our annual garden.

The gardens at the Ambler Campus are always open to the public, and visitors are welcome any day of the week from sunrise to sunset. The annuals are at their best during July, August and September. However, other areas of the campus gardens provide color from the time the spring bulbs are in bloom until frost in the fall.

●

brussels sprouts

If you're like me, you think the fall harvest season of vegetables pretty much ends with the first hard freeze. Of course, some frost doesn't hurt "toughies" like lettuce, cabbage and broccoli, and often improves the flavor of kale and Brussels sprouts. But is there any fresh vegetable to pick in the dead of winter, after snow, ice and temperatures near zero? Yes! Brussels sprouts, which defied "old man winter's" icy blasts around the Christmas holidays.

photo by J. Lowe



At Burpee's Fordhook Farms, about 30 miles north of Philadelphia, we sow seeds for Brussels sprouts in a sunny spot in rows 2½ to 3 ft. apart anytime from about mid-June to mid-July. This past summer there was plenty of moisture in the ground to make the seed sprout quickly, but in dry seasons, we sometimes have to water. Seedlings were thinned or transplanted to about 2 ft. apart, and cultivated occasionally. Otherwise they pretty much took care of themselves, and by October succulent sprouts were ready to pick from the bottom of the plants, with lots more forming farther up on the stems.

The plants were left in the ground, and by early January they wore jaunty ice and snow caps. One brilliant day following a snowstorm, I plowed my way down to the rows of Brussels sprouts to investigate. What about the sprouts under the leaves? Would they be fresh and edible or brown and moldy? I pulled off some of the leaves expectantly. Bonanza! Lots of firm green sprouts, many frozen almost solid. I was so thrilled to harvest a fresh vegetable in the midst of snowy surroundings that I almost forgot how numb my fingers were getting. A paring knife helped me to separate the sprouts from the stalks.

The winter harvest thrill increased at the dinner table, too, for these snow sprouts had an unusually scrumptious, mild flavor. I did find that they need to be cooked within a few hours after picking, or else stored temporarily in a freezer, or even on a porch below freezing. Being partially frozen in the garden, they tend to get soft and spoil if kept very long above freezing. Also sometimes I had to peel off a few more outside leaves than with sprouts picked in the fall.

Fickle winter turned to spring in a late January thaw, but this didn't faze adaptable Brussels sprouts plants. It was shirt-sleeve weather the next time I looked at them. New sprouts near the tops of the stems had enlarged to a gourmet size and were every bit as delicious as earlier pickings. Winter returned just as fast as it had left, but in mid-February, under more snow again, there were still good sprouts to harvest. Bravo Brussels sprouts, the indestructible, everbearing vegetable with a big crop, especially from a hybrid variety like Jade Cross!

Jeannette Lowe

Jeannette Lowe is a horticulturist and plant breeder for the W. Atlee Burpee Co. She has spent many summers at Burpee's seed-growing ranch at Santa Paula, Calif., where she has been instrumental in the development and introduction of floral beauties such as the Supreme, Topper and Wedding Bells snapdragons; and the Burpeeana, Zenith and Ruffled Jumbo zinnias. Now stationed at Burpee's Fordhook Farms in Doylestown, Pa., she also has chance to see the vegetable trials, in connection with her horticultural work related to the Burpee Seed catalogs.



credit. Roche

Correction:

In the March/April issue you may have noticed that the wrong drawing accompanied Dr. Wherry's article on *Trillium grandiflorum.* The drawing was of *Tiarella cordifolia* and not *T. grandifolium,* the plant Dr. Wherry was writing about. Herewith is a photograph of *Trillium grandiflorum.*

continued

photo courtesy of W. A. Burpee Co.



Margaret McFadden is a member of the Outdoor Gardeners. For her summer gardening activities she returns to Southold, where she grew up on Long Island. Southold is 100 miles out of New York City on the eastern end of the North Shore on Peconic Bay. Ms. McFadden says the environment there is similar to that of our New Jersey Pine Barrens.

nasturtium gleam

When I leave my spring garden behind for a summer at the shore I take along a pot or two of blooms so as not to be completely flowerless in rented quarters. Nasturtiums are my favorites. When hung from the eaves of an old fisherman's cottage on a creek, their bright colors are cheerful against the dark weathered shingles. Orange or scarlet varieties make more of a show there than yellow ones. Gleam is a semi-trailing kind, good for hanging. But all nasturtiums are charming, whether they are dwarfs, nestling near the ground or are climbers on a fence.

Starting nasturtiums is very easy. A soil mixture, not rich, a little on the sandy side in a clay pot on my south porch will absorb enough warmth from the sun in early May to germinate the seeds. I poke them down beneath the surface leaving about an inch and a half between seeds. Indoor sowing only produces lanky plants for me so I sow them outdoors.

Once sprouted, they need little care except watering and at least a half day of sunshine. Occasional addition of a little fertilizer to the water and cutting the plants back if they get too leggy toward midsummer will keep them blooming. If aphids find them, a squirt or two from an aerosol can of houseplant insecticide will eliminate that scourge. I have even gone off for two weeks and have come back to find my pots of nasturtiums in fairly good shape where I had put them on the ground to catch what rain and sun came their way.

Margaret McFadden

drawing courtesy of
The Salty Thumb



Mary Jane Smedley is a naturalist who teaches ecology at Ridley Creek State Park in Media. She's an impulsive gardener who appreciates the ease of gardening with natural materials. Her own Penn Valley garden includes a conglomeration of plants and shrubs that will endure while she gardens at the seashore.

yucca filamentosa

I have been trying to conserve in miniature a classic ecological community of maritime plants on one of the last remaining sand dunes in Beach Haven, New Jersey. I scavenge anything that can withstand the crucial test of life on a barrier beach, drenches, sun, salt spray and wind.

The indigenous plant on the dune is, of course, the graceful American beach grass *(Ammophila breviligulata),* and I started adding plants mainly to define a path through the garden from our house to the ocean. A friend was getting rid of a hedge of yucca *(Yucca filamentosa).* "Stick them in New Jersey," he said. "See what happens." What happened was just about perfect for my requirements.

Yuccas seem to settle into their pocket of soil and start growing immediately, no matter what time of year I transplant them. Because of their size and huskiness they become windbreaks for the smaller plants I tuck in around the base: the rugged sand binders, five finger and poison ivy, crab grass, and hawk weed. Our prevailing stormy winds being easterly, I plant my strong yuccas according to established seaside practice, in a perpendicular line to the wind and the smaller plants to leeward. I never water at all; I just move plants around as the wind rises and the barometer falls.

The yucca's spiny leaves catch windblown debris and their own outer leaves die back each year, setting up a self-perpetuating mulch that also helps the plants around it. With its bold form, it is in dramatic contrast to the delicate dune grass and makes significant guideposts along the path. In bloom, its white candelabra lights the way for midnight strollers. I compete with the birds for the seeds, planting them carefully in a deep mulch of grass cuttings, hoping to establish a large enough colony in time for them to be bastions of my dune garden against future home builders and hurricanes.

Mary Jane Smedley

podocarpus elongata

Some plants hold a certain fascination and mystery for me. An indescribable aesthetic quality puts them in a special place among the botanical species. Such a plant is the *Podocarpus elongata* of the family Podocarpacaea. The plant, related to the taxus, is evergreen and grows in the mountains of South Africa to a height of 70 ft. It has a character similar to the weeping willow tree. It is an ornamental woody plant that has spikes of white flowers. The leaf is long and narrow, short-stalked, linear to the elliptical. The fruit (prumnopipys) is round, black and fleshy, about 3/8 in. in diameter. Podocarpus gets its name from the Greek word "pous" meaning foot, and the word "karpos" meaning fruit.

My *Podocarpus elongata* is about eight years old and was grown from a cutting. It is pendulous and a little over 5 ft. long. It is the first such cutting that I have ever seen, which is one reason why I was attracted to it.

When I first brought it home it was anything but impressive. As time went on it grew longer and longer and began to take on an Oriental look, so I put it into a deep bonsai pot and set it on a red lacquered shelf that was hung against the white wall of the porch. There in the morning sun it sways with the warm breeze, making flickering shadows on the white wall.

It spends the winter months in the house with other plants that are not hardy. Its dark green glossy leaves light up a corner of the dining room.

My podocarpus has been a favorite of the many visitors who come to my garden on Chester County Day and on the Little Garden Tour.

So far it has produced neither fruit nor flower but I am hoping.

Joseph W. Korninsky



Joseph W. Korninsky is a retired advertising art director who used his art training and experience to design a distinctive garden that creatively combines plants, rocks, water, glass and wood. Scattered about you will find a considerable number of bonsai, saikei, and suiseki specimens, some of which have been exhibited in the PHS Harvest Show. Many garden groups have enjoyed his garden.

classified ads

BEGONIAS—Rare and Common—over 350 varieties. Also unusual House Plants. Price list 25¢. BEGONIAS & EXOTIC PLANTS, 42 Candee Avenue, Sayville, Long Island, NY 11782 (516) 589-4763.

Wanted: Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd., Media, Pa 19063. Telephone Ben Palmer, TR 2-7206.

Specialists in Japanese, city, naturalistic gardens. Featuring volcanic rock, ornamental pools, waterfalls, terraces. Plantings designed by Landscape Architectural Service Department, installed by expert landscapemen. J. Franklin Styer Nurseries, Concordville, PA 19331. Telephone GL 9-2400.

LADEW TOPIARY GARDENS, (Md. 146) Jarrettsville Pike, Monkton, Md. Open weekends: May through October, 11 A.M. to 4:30 P.M., admission $2.00. Weekdays: by appointment. Special tour rates. For information: call 301-692-6069 or write Box 58, Monkton, Md. 21111.

Gardening is going places—are you with it? THE AVANT GARDENER brings you all the "firsts"—new plants, products, techniques, with sources—plus full features, special issues. A unique horticultural magazine-news service, 24 issues a year, over 500 articles. Curious? 3 sample copies $1.00 Serious? $8.50 for a full year. P.O. Box 489, New York, NY 10028.

GROWING THOUSANDS. Plants for special uses. Partial list. **For Light Shade:** pachysandra, vinca Bowles, ajuga, hollies, rhododendron, hellebore, liriope, astilbe, etc. **For Rock Gardens:** heathers, dwarf junipers, *Ilex belleri,* perennials. **For Formal Gardens & Borders:** boxwoods, yews, dwarf spruce, cypress, etc. **For Bonsai (starters):** dwarf evergreens, Japanese maple, cotoneaster. **Our Work:** Ground Improvement - Soil Testing - Selection - Arrangement Design. 40 years experience. Personal service. Samuel Knight Cowell, Roxborough Nursery. List. Sales by appointment only. Call 828-3534, 6 PM best.

HOW TO GROW IT Plant Sale, May 18, 10 a.m. to 7 p.m. Annuals, perennials, vegetables, herbs, trees, shrubs. Butler & Lindenwold Aves., Ambler, PA (opposite Artie's). Rain or shine. Benefit of Rising Sun, Inc.

Established Center City plant store FOR SALE. Serious inquiries only. Reply Box LGM-1, c/o The Green Scene.

Center City garden center seeks merger with successful expanding suburban garden center. Reply Box LGM-2, c/o The Green Scene.

FOR SALE. Plants for house and greenhouse, including rare and hard to find varieties. Call TU 4-0497.

WILDFLOWERS, HERBS, PERENNIALS, TERRARIUM PLANTS — our specialty. Come see our gifts and antiques too! Two new shops . . .

The Rustic Gardens	The Plumstead Village
Sterling Center	Route 611
Route 202	Plumsteadville
Lahaska	

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.



photo by James H. Slayman

Gravers Lane Station on the Reading Chestnut Hill line. See story on page 2.

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

JULY • AUGUST • 1974

$1.00



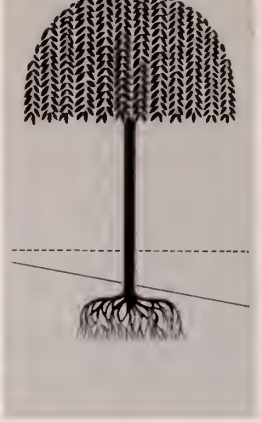
MORE ABOUT PRUNING



6



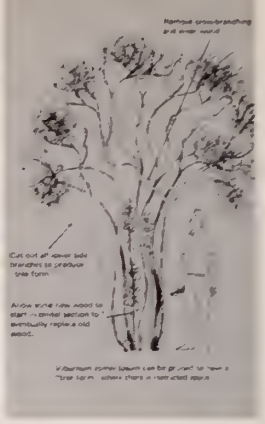
26



2



20



10



14

THE
green scene

HORTICULTURE IN THE DELAWARE VALLEY

Volume 2, Number 6 July, August 1974

published by
THE PENNSYLVANIA
HORTICULTURAL SOCIETY
325 Walnut Street, Philadelphia, Pa.19106

Ernesta D. Ballard/*President*
Jean Byrne/*Editor*

PUBLICATIONS COMMITTEE
L. Wilbur Zimmerman/*Chairman*
Charlotte L. Archer
M. M. Brubaker
Frederic W. Clark
George M. Harding
Nancy Howard
Craig S. Oliver
Ralph M. Sargent

DESIGNER
Julie Baxendell
Baxendell Design Associates

THE GREEN SCENE, Volume 2, No. 6 published bimonthly, January, March, May, July, September, November, by the Pennsylvania Horticultural Society, a non-profit membership organization at 325 Walnut Street, Philadelphia, Pa. 19106. Subscription: $5.00 — Single Copy: $1.00. Second class postage paid at Philadelphia, Pa. 19104.

POSTMASTER: Send Form No. 3579 to THE GREEN SCENE, 325 Walnut Street, Philadelphia, Pa. 19106.

© Pennsylvania Horticultural Society, 1974

in this issue

1	Editorial *by Ernesta D. Ballard*
2	The Tree's Plumbing System *by Leroy V. Svec*
6	The Topiary Garden *by Robert Baker*
10	Pruning Large Shrubs *by David Melrose*
14	Nature's Pruning Inspires Bonsai *by Jerald P. Stowell*
20	Keeping Trees Fit to Survive *by David Poe*
26	Climbing Trees is a Job, Not a Sport *by Andrew W. Moore*
30	The Tyler Arboretum: *Cimicifuga racemosa* *by Gertrude S. Wister*
31	The Morris Arboretum: *Oxydendrum arboreum* *by Ellen V. P. Wells*
32	Book List: Books about Pruning
32	Classified Advertising
33	Index
Front Cover:	Ladew Topiary Gardens, Harford County, Maryland. See page 6.

Front cover photo by Robert Baker
Back cover photo by David G. Poe



the kindest cut of all

Soon the people are busy clearing away trash and planting seeds. Little green seedlings are sprouting everywhere. Then, the city is as beautiful as the forest. "Stories for Free Children," MS Magazine, May 1974

Wouldn't it be nice if it were that easy, if every seedling planted in a city park grew to maturity, if every tree saved from the bulldozer lived happily ever afterwards? But, sad to say, it doesn't happen that way. Cities, and suburbs too, for that matter, provide a harsh environment for trees. Too little water, too little light, compacted soil, polluted air, salt in winter and grime in summer. Trees in built-up areas, hemmed in by roads and parking lots and buildings, even the attractive houses in our towns and suburbs, need help just to stay alive.

Much of this issue of the *Green Scene* deals with one of the most effective methods of helping trees—pruning. Pruning trees is not as sentimental as planting them. Nor is it as dramatic as saving them from the chain saw. Pruning is rather unexciting—and expensive. But it is absolutely necessary. Trees have no discretion. They grow too big for their roots, or too heavy for their limbs. Then they break or split or are blown down. That may be all well and good in the forest where there are others waiting to take their places. In built-up areas, however, a tree has no successors. In a very real sense, a big tree lost from your park, or your street or your yard can never be replaced. The sapling you plant in its stead will not grow as big as its predecessor, assuming it is able to grow at all.

A well-pruned tree is much less likely to break or split or blow over. The loss of moisture from its foliage is in better balance with the absorptive capacity of its roots. Its chances for survival are greatly enhanced.

So one of the messages that we horticulturists must preach, and practice, is the importance of pruning the trees we see around us. We must encourage our municipalities to take care of the public trees, and our neighbors to take care of their private trees. And we must not begrudge the cost, whether it presents itself in the form of taxes or an arborist's bill. Few, if any, other expenditures are equally rewarding.

Ernesta D. Ballard

the tree's plumbing system

Pruning affects the movement of nutrients in trees; be careful where you cut.

Do you ever wonder how a tall tree moves water around inside to supply even the farthest portions of its leaves and branches? What kind of driving force permits this internal distribution and what sort of pathways are used? And surely other things besides water are important for a tree's growth and development. What are they and how are they moved? And how do we disrupt the normal system of transport when we prune large plants?

Small plants and large have an ingenious system of interconnecting conduits or pipe-like cells that function in different aspects of the internal distribution. This "plumbing" system has undergone numerous changes and modifications as plants have evolved to survive different environments, but the basic system involves specialized cells of two types. We call these **xylem** and **phloem.**

Xylem is concerned mainly with moving or transporting water throughout the tree. At maturity, a tree's crown can be separated from its roots by as great a distance as 300 ft. (e.g., redwood). Each bit of water must be taken into the plant at the tips of the roots, transported to the new growth of the trunk and leaves and used in cellular processes or transpired. The network of pipes and supports required for this transport is generated anew each year. Each year's contribution is contained within the tree's trunk, branches or roots and makes the wood that man finds so useful. The "driving force" in water distribution appears to be transpiration, i.e., evaporation of water to the atmosphere from the leaf surface. As one water molecule is lost from liquid inside the leaf to vapor outside, it is replaced with another molecule of liquid inside. This replacement establishes a "pull" on the adjacent water molecules in the leaf; subsequently it pulls on the water molecules farther into the plant in the xylem and the water is literally pulled like a long thread throughout the plant. We call this phenomenon "transpirational pull" and it operates because of water's unique properties of surface tension and cohesion. The xylem cells have developed thickened walls as plants have evolved and in tree xylem this thickened wall probably functions to resist collapse from the tremendous "pull" forces needed to draw water throughout a large tree by transpiration.

Besides water, the xylem is used by the plant to transport necessary mineral elements from the root tip, where they are absorbed, vertically throughout the trunk, branches and leaves, where these minerals are used (Figure 1). The movement of water into the roots seems to be by diffusion, a process that requires little energy, while the absorption of minerals is an active, energy-consuming process. Relatively large amounts of certain minerals are needed by trees and thus their uptake into roots is

by Leroy V. Svec

Leroy Svec is a plant physiologist at the University of Delaware. He was trained in the Department of Agronomy at the University of Nebraska (B.S.) and Purdue University (M.S., Ph.D.). At present his research involves stress physiology of plants, especially nutrient and moisture stress. He also teaches courses in plant physiology and plant metabolism.



FIGURE 1. Water and minerals are transported from roots to leaves in xylem.

under close control. The minerals are moved in the xylem along with the water, in a relatively passive process, just riding along with the stream. Usually only water and dissolved minerals are transported in the xylem. However, in the spring, xylem serves an extremely important function by transporting large amounts of stored sugar from the roots and trunk to the newly developing buds.

Phloem cells generally move water downward in trees. The major dissolved constituent, however, that phloem cells carry is sugars produced during the process of photosynthesis in leaves. The phloem consists of two types of cells, the sieve tubes and the companion cells. The sieve tubes are somewhat similar to xylem cells, being elongated and thickened. However, the companion cells have no parallel in the xylem. Companion cells provide the metabolic

continued

energy to the sieve cells to transport the sugars throughout the tree. In contrast to the transport of minerals in the xylem, which is a passive process, the transport of sugars in the phloem is an active, energy requiring process called **translocation.** Translocation provides the mechanism for the leaves, which produce sugar, to nourish the branches, trunk and roots and thus allow all the growth, development and storage process to proceed normally (Figure 2). Phloem translocation can also be upward, especially in the spring, similar to the movement in xylem. This unusual spring flow in phloem is especially noticed in sugar maple trees, for example, where we collect and use the stored sugar to make particularly tasty food products (Figure 3).

Intermixed in the xylem and phloem cells are other support cells, which exchange gases and move nutrients throughout the mass of the trunk and branches. These cells are called fibers (for support), lenticels (for gas exchange) and rays (for horizontal nutrient movement). These specialized cells have unique functions but the majority of water, nutrient, and sugar translocation is carried out by the major cell types, the xylem and phloem.

A layer of cells called cambium lies between the xylem and phloem. The cambium is meristematic, that is, its cells divide to produce new cells; thus the cambium is the origin of all new xylem and phloem cells. The cambium layer is responsible for the growth in diameter of a tree trunk and anything done to the tree to interfere with the cambium activity will interfere with tree growth.

The final major cell type seen in trees is the outer layer of bark, called cork cells. These cells have little to do with transport but rather are necessary to protect the trunk from disease and dying. Cork cells are produced by a cork cambium that continually produces new cells to replace those lost or sloughed off by the bark. Anything done to the tree that removes cork cells from the tree can interrupt proper tree growth.

When man manipulates trees to his advantage by pruning or trimming, for example, he sometimes ignores what is now known about tree growth. Example: When large trees are on the site of a new home, often the excavating and leveling of the site are done in such a manner that a thick new layer of soil is deposited and compacted around the base of the tree. This layer of soil prevents sufficient oxygen from reaching the roots; the oxygen is essential in the active metabolic processes necessary for the root to take minerals into the plant. Thus we choke the tree to death.

Likewise, just as the pioneers used tree "girdling" (i.e., cutting a deep

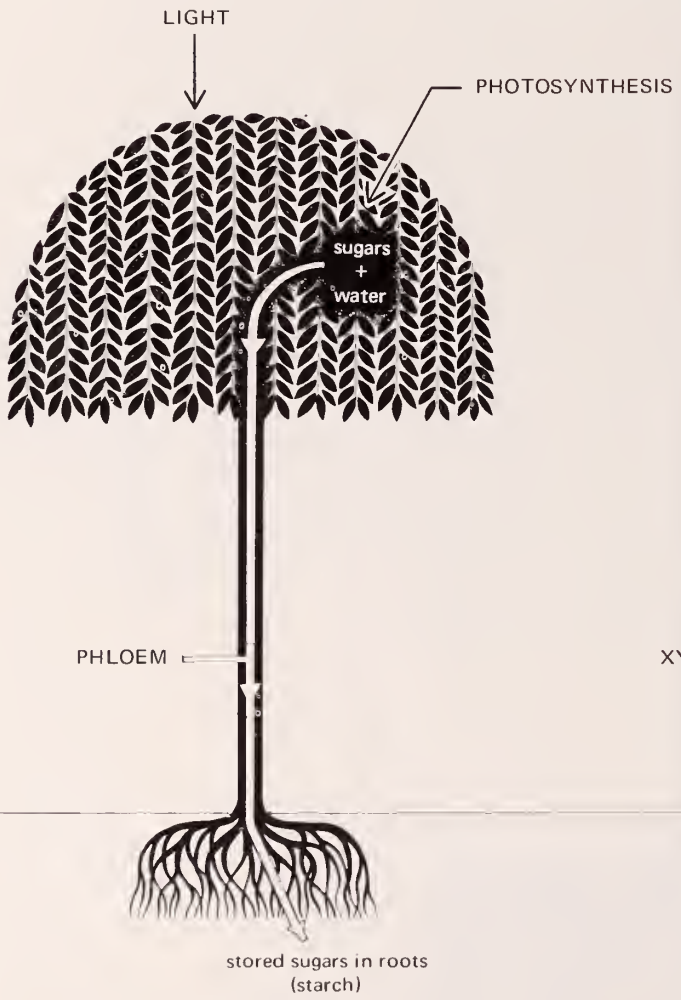


FIGURE 2. Sugar is translocated from leaves to roots in phloem.



FIGURE 3. Stored sugar is translocated in spring to new buds in both xylem and phloem.

channel into the outer layers of the tree trunk, including severing the cambium) to kill the tree, so do we see evidence of the same phenomenon when trees have been damaged by heavy equipment.

We must avoid such mistakes as we manage trees around our homes. Damage due to construction activities can be minimized if we are careful. Build a retaining wall or well around the base of trees in areas that must receive soil fill, so as to maintain the original grade (Figure 4). If soil is removed from around a tree, take care to adequately replace the soil and fertilize and water the tree to promote new root growth and survival. These simple measures will permit the roots to continue water and mineral uptake and will allow the tree to be properly nourished. Physical damage to the trunk by equipment should be properly shaped, filled and sealed to prevent water loss and disease entry. Such care can prevent small problems from developing into problems severe enough to kill the tree.

Likewise, pruning must be done with proper equipment and using such techniques that produce least chance for damage. (See articles by David Poe and Andrew Moore in this issue.) Pruning includes removing branches that are broken, dead or diseased to prevent decay-producing fungi from penetrating into the part of the tree to which these branches are attached. Such pruning maintains the tree's health and helps protect the inside of the tree from decay where new cells cannot be generated. The anatomy of the tree requires such pruning be done promptly so that water and nutrients are not lost from the xylem and phloem elements which are exposed, and so that such exposed parts are protected from entry of disease.

Other pruning for the health of the tree includes removal of live wood to promote air circulation and light penetration through the tree canopy. In such pruning, care must be exercised not to remove so much wood and potential leaves that production of sugars by photosynthesis is excessively reduced. Drastic pruning removing much potential leaf surface may seriously affect the food supply and weaken the tree. Likewise, such pruning may favor disease and insect attack by lowering the vigor of the tree. Removal of leaf tissue will also decrease the transpirational pull mentioned above and can adversely affect the water and mineral uptake and transport system.

By knowing more about the transport and translocation activities in trees and what forces, chemicals and pathways are involved in these activities, pruning can be effectively done to produce the best looking and growing trees possible.

●

drawings by Julie Baxendell

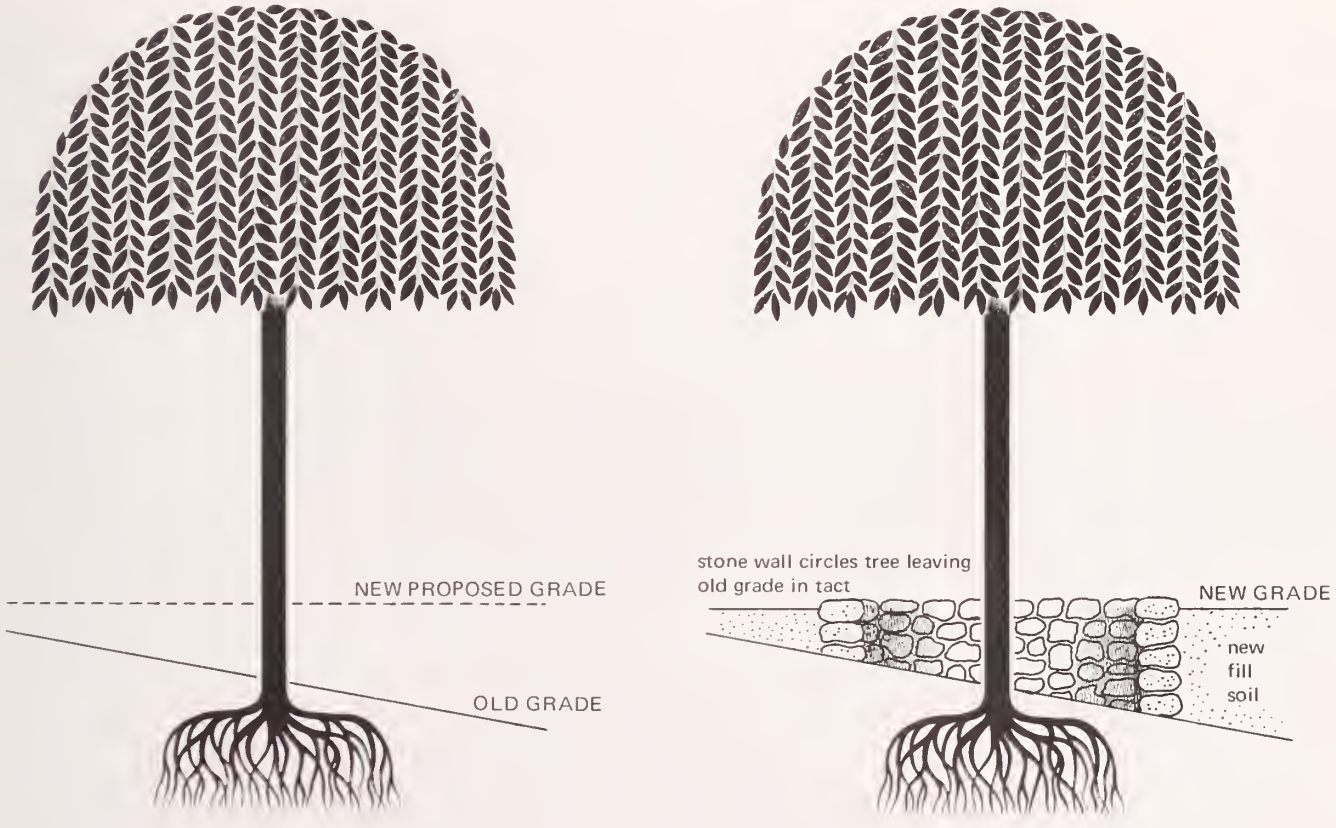


FIGURE 4. Tree well for filling soil to new level by grading with use of retaining wall.

THE TOPIARY GARDEN

Figure 1



by Robert Baker

Robert Baker is an ornamental horticulturist with special interest in taxonomy. He teaches at the University of Maryland in the Department of Horticulture. Baker received his M.S. and Ph.D. from the University of Maryland with training in horticulture and botany.

Below, left:
Windows of Canadian hemlock with sculptured garlands look out on a vista of hills.

Below, right:
These topiaries stand 8 ft. tall and are formed from Japanese yew.

Among the fine gardens seen by PHS members on their visit to Baltimore in April 1973 was Pleasant Valley Farm, the garden of Harvey Smith Ladew. The creation of one man's imagination, the gardens were begun nearly 50 years ago on a farm in Harford County, about 15 miles north of Baltimore. At that time cornfields covered the site. Extensive grading was done to create the present contours of the gardens, which cover about 14 acres. Reminiscent of the great garden at Hidcote Manor in England, Ladew's gardens consist of a series of enclosed garden "rooms" with occasional vistas into other parts of the gardens or into the surrounding countryside. These "rooms" include a berry, iris, and a rose garden; yellow, red, and white gardens; a water garden; and the topiary gardens. Additional topiary specimens are found throughout the entire estate.

It is the topiary at Pleasant Valley that has given it the reputation as one of the finest gardens of its kind in the world. In spite of its size and intricate detailing, the garden does not have a large staff. For about 25 years one man, Walter W. Preston, has cared for all of the topiary specimens as well as much of the other work in the garden.

The topiary designs are all of Ladew's own invention. Originally the frames were made in England, but for many years they have been made

continued

photos by Carole Bell

Figure 2



Figure 3



Winston Churchill's top hat and fingers shaping the victory sign can be seen in the background. These shrubs were shaped from yew.

locally. The galvanized iron wire frame is attached to a long rod that fits tightly into a pipe driven into the ground through the center of the shrub, whose branches are then trained up into the frame. If the frame is painted dark green or black it soon becomes almost invisible as the branches become more dense with continued shearing.

Figure 1 shows a portion of the garden first seen by most visitors as they stand in front of the house (just out of view at the far right). You can look down the series of terraces along an axis bordered by a double row of tall pyramids, hedges, and topiary birds of Canadian hemlock *(Tsuga canadensis)*. The terraces end at the "Great Bowl" of turf gently graded to a circular pool of water in the center. Following the original line of vision beyond the pool, the axis continues up a gentle slope and ends in the far distance at a small white gazebo of classic design. The terraces and upper garden near the house are bordered by tall hemlock hedges with large "windows" cut into them; the windows look out as far as the eye can see over the rolling hunt country of Harford County. (See Figure 1, left center.)

These 10 ft. hedges demonstrate how well Canadian hemlock lends itself to continued shearing. They are now about 35 years old, and when you push away the dense foliage you can see surprisingly large trunks. These tall hedges are ornamented along the top with a series of peaks and curves developed within the last few years. Another unique feature is the chain of garlands between the hemlock windows, a beautiful example of sculptured plant material. The branches that cover the tops of the windows are supported by horizontal pipes attached to vertical pipes set in the ground within the hedge. The horizontal supports prevent snow or ice from weighing down the branches. The branches are intertwined to form a durable dense growth over the window openings.

Preston notes that although the hemlock grows more rapidly than yew, it is more difficult to fill in gaps left by dead branches of hemlock. Yew regenerates new growth after cutting back into the older wood; hemlock does not readily produce new growth from old wood. Several of the topiary hemlock birds on the terraces have had to be removed as the older wood of the head or tail becomes less vigorous and less dense. This is done by pruning out all of the existing wood, removing it from the frame, and then training vigorous new shoots up into the frame. It takes about three to five years of further training and shearing for these new hemlock shoots to fill out the frame.

The shearing of the hemlock hedges and pyramids is done about three times a year, usually beginning in late June or early July. They are next sheared in September and again late in the season around Thanksgiving to prevent snow and ice from clinging to any shoots. The tallest hemlock hedges may be sheared only once a year. Electric hedge shears are used for the hedges, except for the garlands and other details where hand shears are used.

Figure 1 also shows another feature of the garden at Pleasant Valley—the undulating yew hedge capped by the topiary swans that borders part of the Great Bowl. This hedge originally had flat surfaces, which were later cut out to create the series of wave-like curves that make it so distinctive today. The elongated necks and heads of the swans consist only of a single branch of yew trained up into the frame. After many years these stems sometimes become too large for the narrow wire frame and the new growth also becomes sparse. When that happens, the necks and heads are renewed by gradually removing dead or old wood and care-

fully retaining several long new shoots to be filled in later.

The main topiary garden at Pleasant Valley consists of several parterres filled with a variety of topiary specimens on frames designed by Ladew. **Figure 2** shows a heart pierced by an arrow, a lyre-bird, and a sea-horse. All are formed from Japanese yew, *Taxus cupidata,* and stand about 8 ft. tall. In every case the topiary frame is placed at the top of a tiered pedestal of yew through which runs the pipe supporting the wire frame. These specimens are sheared frequently to maintain their shape. Certain details, such as the curved tail of the seahorse and the tail feathers of the lyre-bird, must be watched closely for they can easily grow together during one season into an irregular mass of foliage. On the lyre-birds in Figures 1 and 2, some feathery shoots on the two end pieces of the tail are allowed to grow out each summer for a more realistic effect. As with the hemlock hedges, electric shears are used on the yew topiary for the large surfaces, while hand shears are used for smaller details. Several years ago the wings of the lyre-bird in Figure 2 died out, perhaps due to partial girdling by the wire frame. New shoots were trained in, tied to the frame, and have now filled out the original form. Preston says that yew branches are best trained into the frames during the summer months because they are far more pliable when in active growth and during the cold weather the branches may become quite stiff and brittle.

The turkey in **Figure 3** was not trained on a frame but was shaped from the free-growing top of the yew. In the background are specimens representing Winston Churchill's top hat and his victory sign (on the right between the two birds). None of these specimens receives any special winter protection from ice or snow. They appear very solid and have successfully weathered many winters. Only two specimens near the house are protected with a winter shelter against snow sliding from the roof.

The Japanese yew is generally vigorous, grows rapidly, and requires little fertilizer, except to ensure good green color in an occasional plant.

When working on the hemlock hedges and large yew topiaries, Preston stands on a plank resting between two stepladders. He also uses a specially designed three-legged stepladder, one leg of which can be set into the hedge or topiary specimen. This allows him to reach more closely into the top of the tallest plants.

Probably the most well-known topiary feature at Pleasant Valley is the series consisting of a fox followed by a pack of six hounds with a horse and rider in pursuit. It was a similar scene in England that first sparked Ladew's interest in topiary many years ago when he passed a high yew hedge the top of which was fashioned into a complete fox hunt. At Pleasant Valley the fox and hounds originally ran across the top of a yew hedge around a circular court near the house. Later the frames were moved to the lawn and the horse and rider added. Japanese yew was used to create the new figures. The plants thrived on that site for about 15 years, but recently began to decline due to poor drainage. Two years ago, after a period of unusually wet weather, the fox and hounds all died. Even in death, however, they retained their good form; see the fox in **Figure 4.** This photograph was taken in April 1973 and shows clearly the dense growth of the yew which had filled the wire frame. The following autumn the dead plants and old frames were removed, new frames made, and installed on replacement plants. The new plants of Japanese yew have been set on slight mounds and the training process has begun again.

●

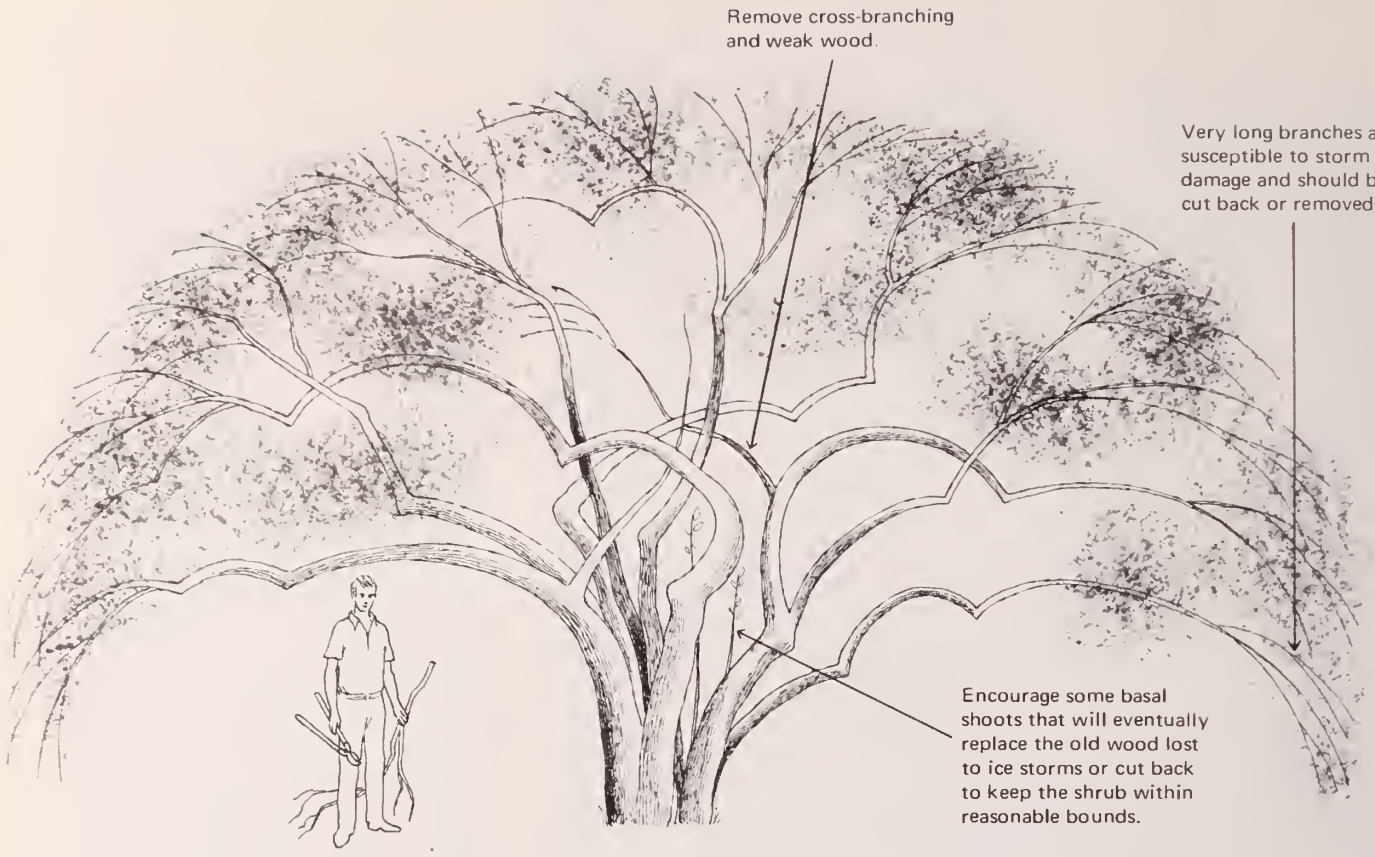
Figure 4



After an unusually wet siege, the foxes and hounds in the handsome hunt topiaries all died. This photograph clearly shows the dense growth of yew that once filled the wire frame.

The Harvey Smith Ladew Topiary Gardens are open to the public from May through October on Saturdays, Sundays and holidays. General admission is $2.00 per adult, .50 per child.

On other days, group tours (25 or more people) may be arranged at special rates by writing Ladew Gardens, Box 58, Monkton, Maryland 21111, or calling 1-201-692-6069. The Gardens are 14 miles north of Towson, Maryland.



Lonicera maacki (honeysuckle)

PRUNING LARGE SHRUBS

by David Melrose

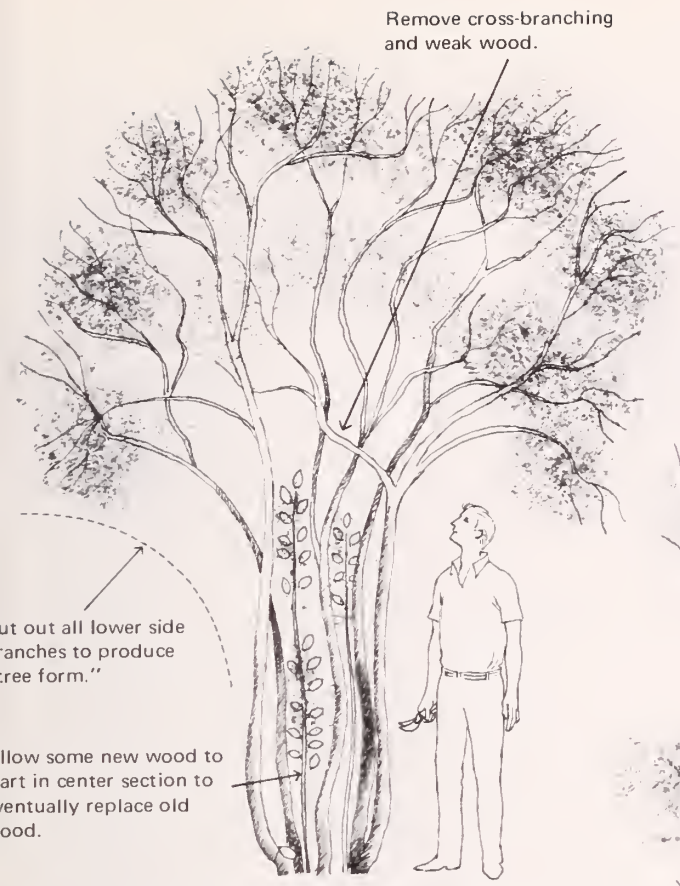
David Melrose has been exercising his green thumb since he was eight years old and helped his father, who was a gardener on a large estate. Melrose was trained in ornamental horticulture at Cornell University and went on to work in the Kew system at the New York Botanical Garden. He was superintendent of the Arboretum of the Barnes Foundation for nine years. In 1959 he began to work in Building and Grounds at Swarthmore and in 1969 he also began work with the Arthur Hoyt Scott Horticultural Foundation on the campus grounds.

drawings by Julie Baxendell

I have always maintained that the time to prune is when you have the tools in hand. Too often we put it off and allow the plants to get completely out-of-hand or overgrown for their location. Picture in your mind some of the shrub lonicera, *Lonicera morrowi* or *L. maacki,* which often cover a space 15 ft. to 20 ft. across and 10 or more feet in height. They sometimes have several heavy based stems and certainly a good many side or lateral branches that extend in all directions. The ice storms this past winter had an adverse effect on some of these large shrub honeysuckles; the weight simply flattened many of these extended branches, splitting them from the main stems. I was busy with other tasks and could not correct the problem after the storms. Certainly the early flowering of the genera has little bearing on when is the "correct time to prune"; it happens to be now! It's spring and I have the time and tools in hand.

Now, what to do becomes quite apparent when we look at the broken-down lonicera. We must remove the broken branches back to or below the point of injury and perhaps even to ground level if there are other main stems to give the plant some basic shape. Having made that step with loping shears and hand saws* (for we are talking about major branches and stems of 2 in. to 3 in. in diameter), we look to the removal of any other cross-branching or weak wood that adds little to the framework of this plant. Again having made these necessary removals we go back to the remaining wood and selectively shorten lateral branching to bring the shrub within more reasonable bounds and perhaps gain a degree of symmetry lost through the initial breakage. We have been rather severe in the pruning of the shrub, losing the very wood that produced much of the early insignificant flowering, and we have also lost this year's important fruiting (fall color and bird food). Nonetheless we did what had to be done and now look forward to better years ahead when less drastic action will allow a greater production

*For a discussion of when to prune and which tools to use, see Ed Lindemann's article in *The Green Scene,* July, 1973.



Viburnum tomentosum can be pruned to have a "tree form" where there is restricted space.



Syringa e. h. montesquieu (lilac)

of fall fruit.

The lilac is perhaps one of the better known and more frequently used large shrubs in the landscape picture. Its usefulness, unlike the fruiting of the bush honeysuckle, lies in the large degree of spring flowering accompanied by its fragrance. We must therefore be restrained in how and when to renew the wood but be very willing to take drastic action after spring flowering when needed.

Generally lilacs on their own root systems (not grafted) will produce many basal stems and will increase by producing basal shoots from the ever-expanding root system.

From these basal shoots, and from low lateral shoots, the future flowering stems are produced. We can select and encourage them to sturdy growth only by removing yearly some of the older producing wood. To cut away one or more major stems that have just given us such a wonderful array of flowering often seems like drastic action. But look to the next season and the years to come. Keep the vigor of the lilac going. Remove that older, leggy stem

continued

all the way to the ground. Select several younger shoots that will be up at eye level in a year or two and ready to do their part in the annual flower show. So when you are passing the lilac after it has flowered this year, give serious thought to major action. You may only have thought to remove a few seed heads, or to remove the stub you left earlier when you cut a bouquet for Aunt Nellie. Once you have renewal of wood or cutting back to younger shoots in mind, the pruning becomes a lot easier. You think more clearly about cross-branching and insect damaged twigs. You take the proper action; you become an expert.

Viburnums are another of the genera of flowering and fruiting shrubs that create considerable interest in many gardens. Some are very large and I offer these suggestions for your consideration. If multistemmed and useful for their fall fruit, select wood yearly that will give the maximum fruiting. If on the other hand it is a large sterile flowering type (the so-called snowball types) or even the large flat head of the *Viburnum tomentosum,* consider the possibility of maintaining one or two major stems and removing other basal stems and lower side branches. You now have the plant in a "tree form." You may have been doing just that over the years. The plant may have been placed in a restricted space from the outset, too close to the garden walk. If the result is not your style, then the shrub is too large and you should select a small flowering tree that gives you flowering, perhaps fruiting, and yes even fall foliar color. You have better possibilities for raising the side branches of trees than the more difficult viburnum.

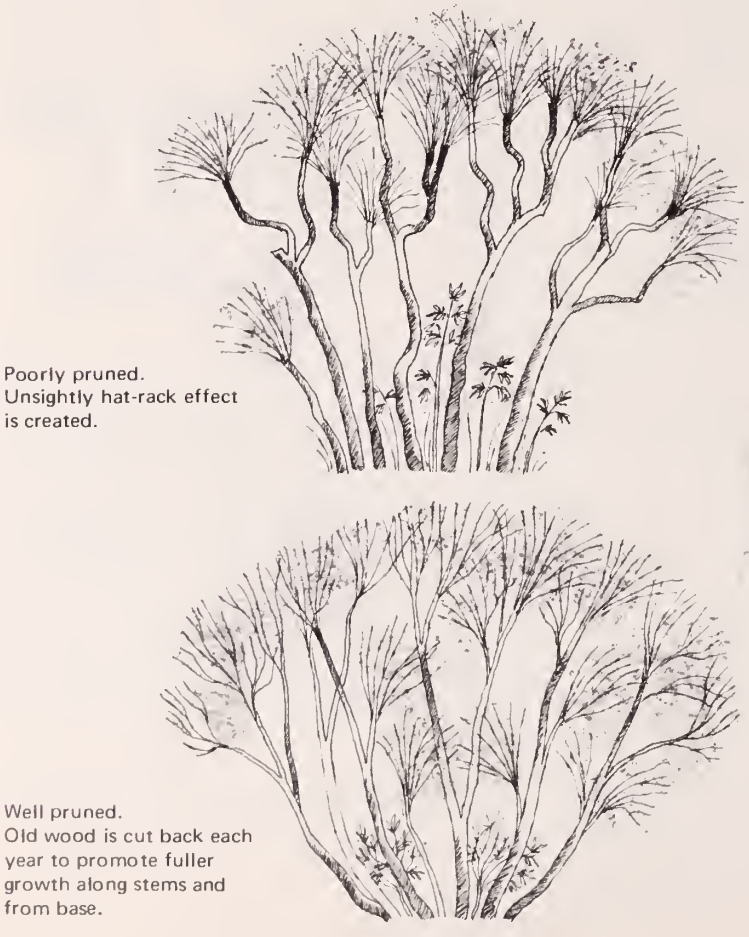
Consider now a large flowering shrub that blooms in late season, consequently a flower that develops on the **current** year's wood, vitex. Here we have all winter and even early spring to do our pruning.

The trick is to get maximum flowering on wood strong enough to support the rather large flower spikes. There seems to be two ways to handle the job. The first is to leave only a bud or two of the previous year's wood on each stem. This is where we often get into trouble and produce a "hatrack" shrub. Each of the previous year's stems, if left, will produce too many stems for this season. Additional removal is in order. Remove one of the two **opposite stems entirely**; only one spur of the previous year's wood should remain on each major stem.

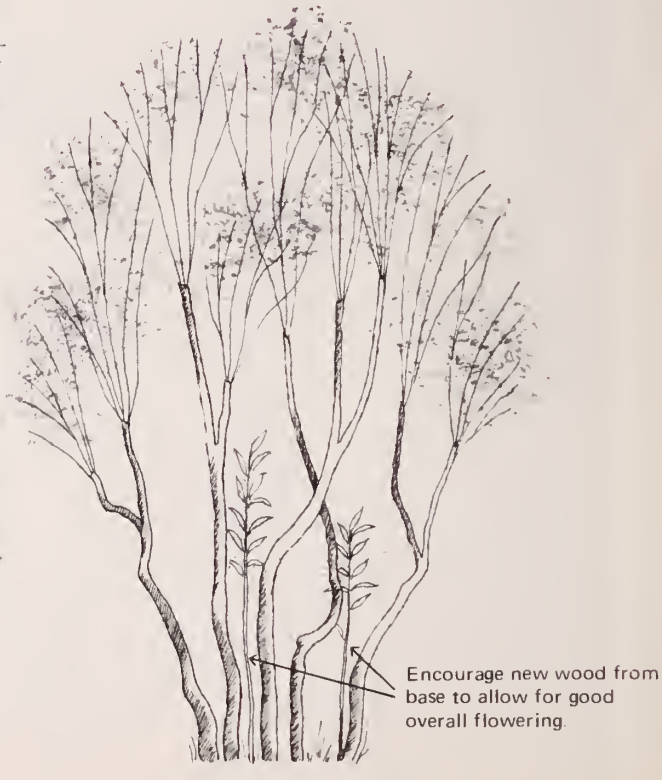
Another approach is to cut everything yearly to the ground and allow only a limited number of basal breaks or shoots to become flowering stems for the current year.

Buddleia or the butterfly bush is another of the later flowering shrubs that can be considered large in the sense that it does make rather spectacular growth in one season and ends up with flowers. Cut back to ground level each spring. It should serve you just as well as holding on to some old wood each year.

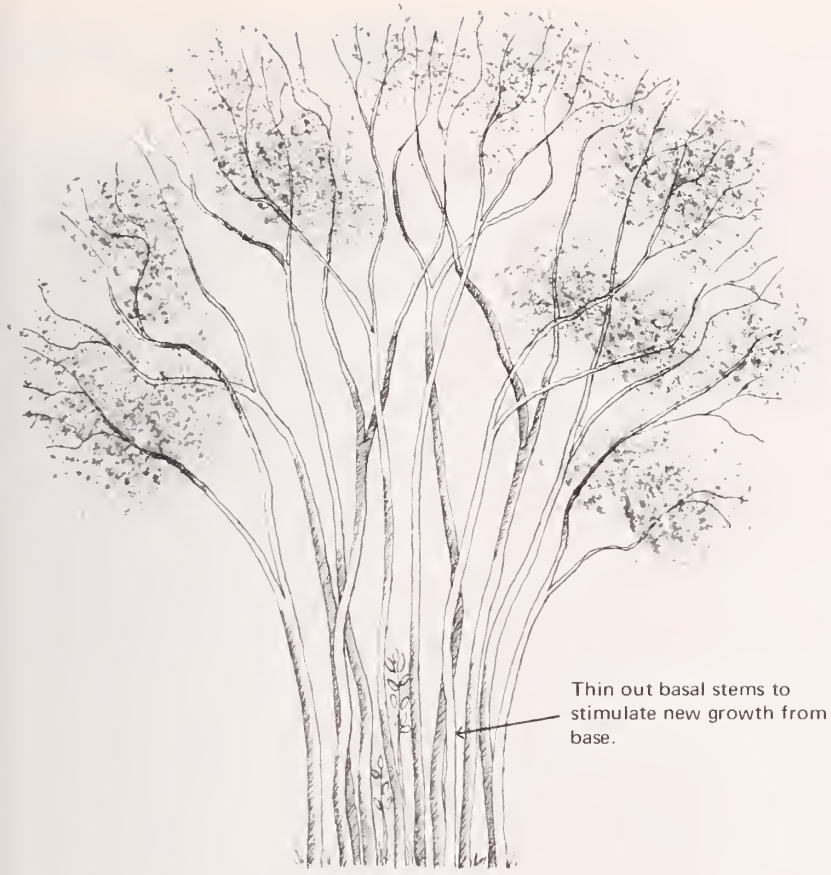
Aronias and other members of the rose family like shadblow are often considered large shrubs and fortunately they usually are great basal shoot producers. We must therefore be rather severe and remove a sizeable number of these basal stems to allow more strength



Vitex agnus-castus



Buddleia 'Peace' (butterfly bush)



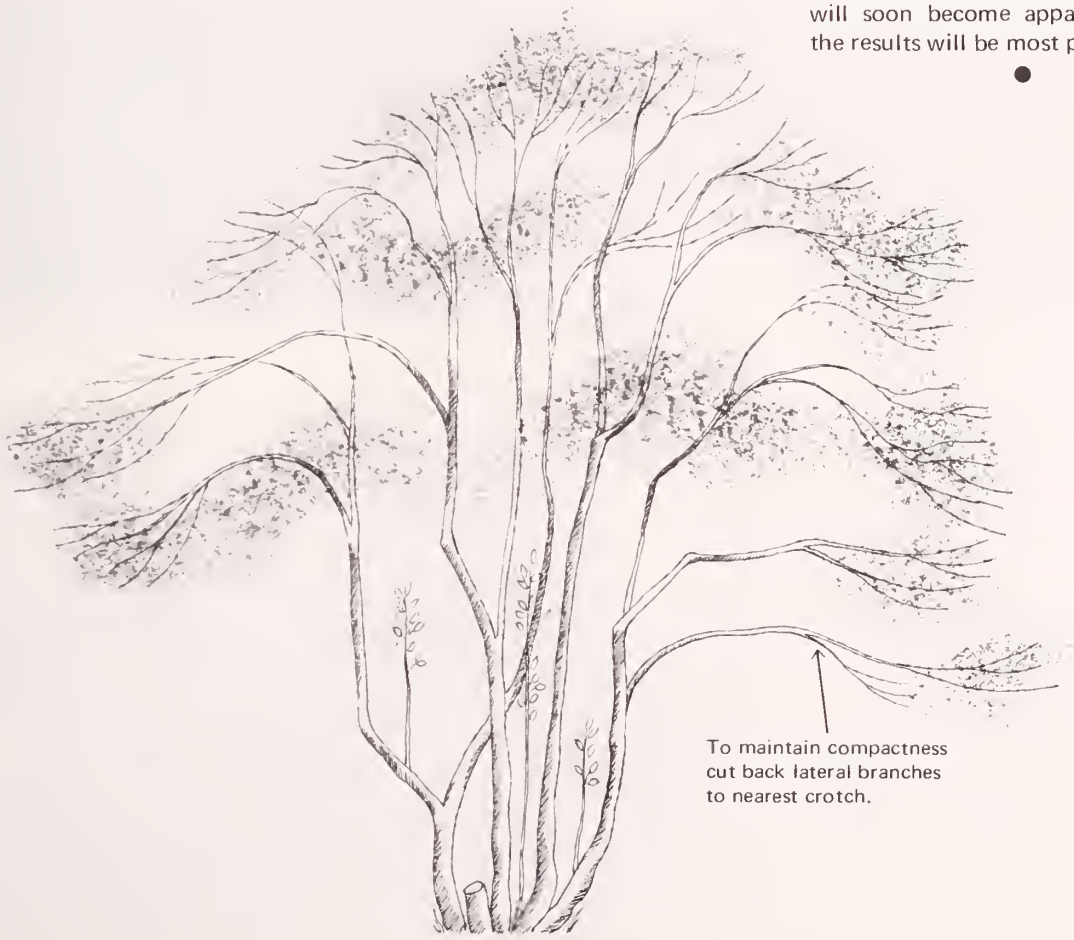
Aronias

for those that remain to support flowering wood and ultimately the fruit.

And finally, a word or two about azaleas. Some are very large such as the Kaempferi, and when grown in woody locations often will become more leggy than we perhaps wish them to be. Here you can usually renew the shrub by cutting back to the new young shoots at the lower part of the shrub. A less severe measure, if you are just interested in a more compact flowering shrub, is to head-back, that is, to cut back the offending branches to the nearest crotch. It will be well to consider removing low overhanging tree branches that perhaps are the real cause of such leggy growth. A little more light will aid in a better flowering azalea in the woodland scene.

In closing, everyone can be an expert on pruning. A little logic and a review of Leroy V. Svec's articles in this issue and that of July 1973, plus the determination to get in and really make some drastic cuts on those large shrubs, will go a long way to getting you started as an expert. Your own observations and sense of the plant's growth habit will soon become apparent; I'm sure the results will be most pleasing.

●



Azalea Kaempferi

nature's



Pruning is the heart of bonsai; however, before you even pick up the pruning shears you must have a highly developed aesthetic sense about trees. The author discusses six trees pruned by nature; they are excellent prototypes for bonsai.

by Jerald P. Stowell

The character and form of a tree in the forest is not as readily apparent as that of trees used in landscaping. Trees used in landscaping are deliberately chosen to add beauty wherever they are planted. Most trees, when grown as a single field specimen or in a nursery will develop characteristics that distinguish it from other species not only because of genetic differences, but because its growing conditions differ from those in the forest, particularly in terms of light and space.

The focal point of a tree is the trunk; radiating from the trunk are the branches and twigs. The size, shape and movement of these structures distinguish the form and character of each tree. Structurally all trees are similar: the trunk rises from the root system into the air and the branches and twigs spread up and out, seeking the light. The pattern of a tree's branches varies according to the species. The crown development represents the growth history of the leading shoot, and the adjustment of the side branches to each twig's growth toward the light.

To recognize the characteristics that distinguish one species of tree from another is a matter of training one's eye. Here and there specific features are learned and used for identification. Certain trees look different from the rest; they will be recognized no matter where they are found. Some of the common trees that we see and recognize in the early spring are the weeping willow with its rounded crown and its branches trailing to the ground; dogwood, with its flat crown, widely spaced horizontal branches and upcurved twigs; and the apple tree with its round open branching crown and sculptured trunk. The graceful arching inverted vase shape of the elm, the short and massive quality of the oak, the angular impressiveness of the sycamore, the quivering column of lombardy poplar, the light trunk and horizontal branching of the honey locust, are just a few that appear in the northeast.

In the garden and for landscape purposes, most trees are pruned to keep them in scale, to improve their character, design or beauty or just to keep them healthy. In nature, however, trees are pruned accidently by wind, the weight of heavy snow, decay, lightning or growth patterns. These elements create in mature trees the characteristics that make certain trees more outstanding, beautiful or unusual in design.

As a bonsai expert, I have been trained to look at mature trees as prototypes for bonsai. In bonsai, we strive to create the illusion of an aged specimen in miniature, not to reproduce it exactly since bonsai are not small replicas of trees. I'll illustrate what I mean by giving examples of large trees that have been pruned by nature; they have taken on unusual shapes and characteristics that would also make beautiful bonsai if the trees could be reduced and planted in the correct container. Often, when looking at a tree in the landscape, I must squint my eyes to blur the background and focus my attention on the beautiful design. The overall composition or design in nature is usually pleasing and careful observation often inspires bonsai. The design elements expressed in large trees are balance, rhythm, and unity. I will discuss these elements and show how nature has shaped the character of a specific tree so that it becomes a perfect model for a bonsai.

Each of the trees illustrated here have been selected for their unusual characteristics and design. All but one were pruned by nature; however, each has the qualities of a unique and beautiful bonsai.

Each of the trees that we pass daily is as unique and different as human individuals. The average person never sees the tree for the forest. A good gardener will see both the tree and forest. The individual who grows bonsai, however, must observe tree shapes and forms, have a sense of design and the ability to abstract these qualities from nature to communicate these perceptions to the viewer.

Bonsai, a miniature illusion of nature, stirs the mind to recreate memories of experiences and creates curiosity and interest about the present.

pruning inspires bonsai



1

photos by Warren S. Cooper



1. The tree selected for these two illustrations is a native red cedar *(Juniperus virginiana).* It grows from Maine to Georgia and west into Kansas as far as central Texas. The specimen here grows in Virginia along the coastal region and has an unusual characteristic due to the wind. Inland the tree is rather oblong when juvenile but more conical in shape as a mature tree.

The branch patterns in this specimen are irregular and quite spectacular. The texture of the bark is an element of design that is appealing as well as the dead stubs of each branch. Each item adds to the character and beauty of this composition. Indeed, the balance of nature can be seen in large trees through the eye of a bonsai expert.

continued

nature's pruning...





2



3

2. This sour gum *(Nyssa sylvatica)* has a rounded spreading crown. The lower branches, however, have taken on the more mature horizontal, drooping, undulating lines that we are familiar with in the sour gum. It is a field grown specimen that has perhaps not reached its full growth; note that the larger, heavier trunk is balanced by the narrower, higher trunk with a juvenile and twiggy crown. You have two trees and yet they are a harmonious unit.

3 The tree used in this illustration is the common wax myrtle *(Myrica cerifera)* found on the coastal plains from southern New Jersey and Virginia to Florida and Louisiana. Its unique symmetry comes from the effects of wind and ocean's salt spray. The wind has helped nature to shape the long horizontal branches and twigs on one side. The wind also produced the shearing effect on the top making the new growth short and compact along each branch.

Several branches have struggled to grow toward the prevailing winds but have eventually been destroyed by the salt spray; yet these dead branches help the balance of the tree. The short thick branches give the illusion of balance and prevent the tree from falling over due to the excess growth on the opposite side. The trunk is short and gives one the feeling of stability. The tree's design could be the inspiration for a windswept bonsai.

continued



4

4. The tree in the foreground was photographed at the end of a row in an apple orchard that had been worked for many years. However, for the last two years, it grew without pruning for production. Although photographed against the other trees in the orchard it still has a unique character of its own, with its rounded crown of small branches and well defined main trunk. Branches are spread evenly, for light, lower branches are more horizontal and drooping with maturity. The balance and rhythm of the trunk and branches fit together in a beautiful composition against the background of the orchard.

5. This live oak grove *(Quercus virginiana)* was further inland and away from the shearing wind; however, certain trunks have died, leaving a gaunt, stark effect. One trunk is growing and producing round, compact clumps of growth that look almost like forms of topiary. The rhythm of this grove is pleasing to my eyes and the contrast between the dead wood and the live elements of the trees give a satisfying feeling that nature is repairing the destruction that has been wrought.



6

6. The tree in this example, common apple *(Malus sylvestris),* was found in a pasture although it may have been in an orchard at one time since there are other apple trees in the field. The main trunk is short and thick with a number of rather thin young branches competing for the light, presenting a rounded, broad spreading crown with drooping branches to the side. Close inspection of the tree reveals that the major trunk was destroyed by wind or decay, and young new growth has taken over to complete the crown of the present tree. Nature has pruned away a portion but also had restored the beauty of this specimen. This large tree would make an interesting design for a bonsai.

5



Jerald P. Stowell is author of the book *Bonsai: Indoors and Out* (Van Nostrand, 1966). He is a past president of the American Bonsai Society and a lecturer and demonstrator of bonsai techniques. Stowell has an M.S. degree from Yale in Public Health and is executive director of the United Cerebral Palsy Association of Philadelphia & Vicinity.



A very large old white oak tree that was cut back 10 to 15 ft. to reduce the weight and wind resistance. The tree contained large cavities.



photos by David G. Poe

keeping trees fit to survive

by David G. Poe

Large trees require special care. The person who tries doing it himself to economize courts disaster.

Every tree lover knows of fine old trees growing naturally in the nearby woods and forests. These trees have had no care, and yet the homeowner is told that his trees must have special attention in order to survive. The trees that successfully survive the forest competition, however, are not without scars. Close inspection usually reveals large cavities and torn limbs that make them unsafe near a house and unsuitable for a lawn. The survival of the fittest is a fine way to build a forest, but is unacceptable for the homeowner whose short lifespan does not allow him to wait for a valued old tree to die and to be quickly replaced by nature.

The tree owner, especially if he has some special knowledge, can minister to certain needs of his trees and might even be able to remove a low limb or tend to a scar on the trunk. But the large size of shade trees precludes most "do it yourself" pruning. The services of a professional tree man or arborist are needed. The problem, however, is not solved until the homeowner has selected a firm with the knowledge and competence to make the proper recommendations and to successfully do the work. This selection is more difficult than you might imagine. If the only requirement were a daredevil with enough courage to climb to the top of the tree and cut off a few limbs, the problem could be solved through the yellow pages. But trees are complex organisms, and the person entrusted with their care should have a thorough

continued

understanding of their needs, and the experience to deal with their problems. The man who can prune but who cannot diagnose other tree problems is no bargain. It is certainly not economical to have the dead top of a tree removed when the tree man fails to recognize a girdling root or a heavy infestation of scale as the cause of it.

when and why to prune

Does the average tree owner know how to select a good arborist and to tell a good job from a poor one? The answer, unhappily, is "no." All skilled arborists have had the sad experience of submitting a price based on good, high quality work and later finding the job done in a quick, slipshod manner. An understanding of why trees must be pruned, and a few of the principles involved, will help the tree owner to appreciate a good job and to guard against a poor one. I will discuss the nitty-gritty of cost later.

Trees are pruned for three principal reasons: To preserve or improve the tree's health, to prevent storm damage, and to improve appearance.

pruning to preserve or improve health

The removal of dead or diseased limbs is one way to preserve the tree's health. Large dead limbs eventually fall leaving stubs to heal with difficulty. Decay organisms enter stubs and a cavity results. Extensive cavities are difficult to treat; they lead to structural weakness and, many times, the entire tree is lost. Proper pruning will usually prevent such dire results. Dead limbs should be cut flush with the trunk or large limb and painted with tree wound dressing. Callus growth will cover such flush cuts more rapidly and decay can be prevented. However, it is important to avoid removing large limbs unnecessarily even if the cut is made flush. A limb 10 in. in diameter may necessitate a 20 in. flush cut that will take many years to heal. In such a case, even a properly made cut is likely to decay. When removing large limbs, an under-





At right:
An example of how not to cut back a tree. These Norway maples on a street in Philadelphia were "hat-racked." Not only was the shaping poorly done but there was no need to cut the tree back at all.

Below, left:
The men in the tree are cutting back the Drinker Oak in King of Prussia. This picture was recently taken; the tree was cut back heavily nine or 10 years ago. The shape has changed considerably but it is still a fairly attractive tree. It is completely hollow and would have undoubtedly fallen by now if the weight and wind resistance had not been reduced.

cut must be made before the final cut to prevent tearing the bark. Stubby, unpainted cuts and torn bark indicate that the trimming job was poorly done.

A good arborist usually removes sucker growth and rubbing and crossing limbs. Also, if the tree is overly dense, the arborist will usually thin it out slightly to permit better air circulation. This allows the tree to dry out completely after rain and discourages fungus growth and the spread of disease. A thinner tree also offers less wind resistance and will sustain less damage in storms. Removal of dead wood can be done during all seasons.

Health is often preserved by promptly removing diseased limbs. Such work is often done to prevent spread of fire blight in apples and pears, cytospora fungus in spruce trees, and diplodia in pine trees. In a few instances, it is possible to keep Dutch elm disease from killing its host by promptly removing an infected limb. When removing the diseased portion of a tree, the cut is made well below the infection. Sometimes tools must be sterilized between cuts, and with some infections, the work must be done in dry weather to prevent spreading the disease further.

Removing dead limbs may preserve health, but cutting back the entire tree can actually improve health and vigor when done properly and for the right reasons. Cutting back, commonly known as "topping," is more misunderstood than any other phase of tree work and is probably more difficult and certainly more expensive. When done by inexperienced people, it can be disastrous and is responsible for thousands of monumental hatracks on our streets and lawns. Almost everyone is familiar with trees that are ruined by such "hatracking" done in the name of tree preservation. Cutting back a large tree properly is a very difficult job and requires highly skilled men, but it can be a work of art when done properly.

Cutting back is often helpful when a tree has suffered root loss from construction damage or drought. The foliage area of the tree is cut back or reduced so that the smaller root system can sustain it. The remaining part of the tree is often completely revitalized as a result. Of course the cause of the problem must be corrected or the good results will often be only temporary. Cutting back is difficult for many reasons, and several factors must be considered:

- The pleasing shape of the tree must be retained even though it will necessarily be smaller. The tree must be studied carefully to decide how far it **can** be cut back without deforming it, and how much it **must** be cut back to achieve the necessary results. Each limb then must be considered carefully to select the right spot for cutting. That is usually at a fork or the largest lateral branch possible. When this method is followed, the result is a soft, natural outline with no stubby ends apparent. The test of success is an almost natural appearance. One thing must be remembered, however; even the most skilled arborist will seldom improve the appearance of the tree and must be satisfied with as little disfiguration as possible. Large trees should only be cut back when absolutely necessary.
- The species must be considered because different trees respond in different ways. Sugar maples and beech, for example, can be cut back only slightly. The bark of both of these trees is very sensitive to the sun and abruptly removing their canopy of leaves can cause sunscald. Silver maple and willow, on the other hand, will tolerate a great amount of cutting back without damage. Most trees are likely to

continued

produce an abundance of sucker growth that is unsightly and that must be considered when deciding on the extent of cutting back.

- The season of the year is important. Winter is usually a safe time to cut back most trees, and fall or spring is often satisfactory. Late summer may be dangerous because the new growth that follows such pruning may be injured by cold weather. Fewer suckers will be produced when the work is done in mid-summer.

When considering cutting back or topping a prized tree, the tree owner must be convinced that there is a real need for this work and that it will be done skillfully. Most topping jobs are not needed in the first place, and most trees will never regain their natural appearance after a poor job.

pruning for safety

Everyone is familiar with the sight of dead limbs strewn across the lawn under large trees after a summer storm. Dead limbs must fall eventually, and the larger ones should certainly be removed to prevent damage to people or objects underneath. However, there are other precautions to be taken. Split or broken limbs, or those with cavities should either be removed or cut back so that they can support their own weight and offer less resistance to the wind. Some trees, however, are more prone to damage by storms than others. Those with cavities in trunk or limbs are likely to be damaged by wind or ice. Shallow rooted trees, or trees with undeveloped or injured root systems, can be blown over. There are others that sustain more damage because of their growth habit or the brittleness of their wood. Storm damage can often be prevented by proper pruning beforehand. Trees that are likely to be uprooted or have large trunk cavities can be protected by thinning out or cutting back. Others that are very brittle or have excessively long limbs, such as willow, poplar, tulip tree and white pine, can be helped by cutting back. Proper storm proofing is an excellent investment in tree preservation and is a wonderful tranquilizer for the tree owner on stormy winter evenings.

pruning for appearance

Large mature trees are seldom pruned to improve appearance except that the normal removal of dead wood and sucker growth usually makes them more pleasing. There are times, however, when nature can be assisted by removing or shortening an incongruous branch or two. Also, removing certain low limbs will often turn a plain, unspectacular tree into a thing of beauty. Often, too, a tree must be pruned for the benefit of nearby trees or shrubs or the lawn beneath. This is usually done by removing limbs or cutting back certain portions to allow more light to the other plants. Sometimes a very mediocre lawn is helped dramatically by removing a number of low limbs. Many tree owners want to thin out or cut back to allow light to penetrate to the lawn, but that is seldom effective for any length of time, whereas removing low limbs is much more effective and permanent. Occasionally large trees obstruct an attractive vista and carefully trimming out certain branches can open up a pleasing view.

Sometimes a mediocre lawn is helped dramatically by removing a number of the trees' lower limbs.

cost

In addition to expert workmanship, the tree owner hopes that the cost will be low; he may be disappointed. The cost of pruning a large tree can be high. The owner must take into account the reputation of the arborist, the reasonableness of his recommendations, and the scope of the work suggested, when hiring an arborist. Many tree owners, however, do not even assure themselves of a specialist in tree care. Often any handyman with a saw will get the job, and a recent advertisement reading "Trees trimmed and cellars cleaned" reinforces this view. The money lost on such a venture is the least of the problem; the damage done to the tree can be incalculable. The tree owner should understand in detail the arborist's recommendations; these should be written up and costs clearly specified. Only in this way can the owner make any attempt to compare prices.

Tree care costs undoubtedly seem high to the tree owner, and it is surprising just how much it can cost to prune a large shade tree. However, prices charged for tree work do not exceed prices charged for other skilled services. Several factors are responsible for the cost of pruning. Labor, of course, is by far the greatest expense involved. There are comparatively few labor-saving devices available, and tree work continues to be done largely by skilled men. This arduous and potentially dangerous work must be performed in all kinds of weather, and the wages of men willing to do such work should be high. Although there are few labor-saving devices, the equipment needed for a single tree trimming crew of three men commonly costs from $12,000 to $13,000. Large dump trucks, chippers, and four to five power saws are a necessity now. In addition, ropes, ladders, hand tools, electric drills, and many safety items are required by new federal safety regulations. Another large part of an arborist's expense is insurance, and this item will usually be higher in a firm with a poor safety record.

other factors considered when estimating costs

Here are some factors that determine the cost of trimming a tree.

The size of the tree. Size is usually the most important factor. A great amount of time is spent simply climbing to the top of a large tree or inching to the end of a long limb.

Obstructions on the ground. Shrubs, houses, walks, fences, electric wires and other objects to be protected usually force the arborist to rig extra ropes to lower large limbs so that no damage will be done. This process is time-consuming and increases costs.

Quality of the job. A good job costs more. Obviously removing only the large dead limbs is less expensive than a thorough job where even small dead



A large Kentucky coffee tree cut back about 28 years ago. When this photo was taken, it was being cut back again. I think this tree is a good example of heavy cutting back without ruining the tree's shape.

wood, sucker growth, and rubbing branches are taken out. Also, it is more expensive to make proper flush cuts that will heal than to make the smaller stubby cuts that will usually decay. Properly cutting back to crotches or large laterals is more costly than standing in the first handy crotch and making cuts at a convenient height regardless of the effect on the tree. Painting all large cuts, including those made with a polesaw, takes more time and adds to the cost.

Amount of brush and debris to be removed. This part of the work can easily run one-third of the total cost, and sometimes much more. The cost will also obviously be increased when the tree is located far from the chipper, and brush must be dragged a long distance across a lawn.

It is dangerous to assume that the lowest price is always the best buy, and it is obvious that a good job will take longer than poor, slipshod work. A cavity caused by improperly cutting a limb is no bargain when the tree fails years later because of it. The man who spoils the beautiful natural shape of a prize tree by doing a fast but unskilled job causes incalculable damage. And the destruction of valuable shrubs underneath, or a hole in a roof, can cost more in aggravation than any insurance company can possibly pay.

Pruning large shade trees must almost always be left to the professional arborist, and the success of the job will depend upon his skill and knowledge. The tree owner's principal responsibility is to carefully select the person to do the work. The selection will be based on many factors, and low price is only one of them. Fine old trees are difficult to care for and impossible to replace. They need the best care that can be provided.

●

David G. Poe has been with the F. A. Bartlett Tree Expert Company for 20 years; he is Philadelphia area manager. He is also past president of the International Shade Tree Conference, Pen-Del Chapter.

"I can remember being pinned to a tree by a rope carelessly draped across a leg when 800 pounds of limb suddenly took the slack out," says professional climber Andrew Moore. "Had I not been properly prepared to handle the situation, I could have lost my leg."

Andrew Moore discusses the tools and skills needed before the arborist starts pruning.

CLIMBING TREES IS A

by Andrew W. Moore

I have been working as a professional climber and climbing instructor for years. I still laugh when a strong athlete returns to the ground after his first real climb shaking all over with aching muscles he did not know he had. I still cringe when I see a beautiful tree ruined by a nonprofessional clip job. It is far less expensive to have a professional do the job than it is to chance ruining a prize tree. What is the cost of the professional compared to a broken bone, a hole in the roof, a car crushed under the tree that got away, or some other avoidable accident?

Accidents happen even to professionals. I can remember being pinned to a tree by a rope carelessly draped across a leg when 800 pounds of limb suddenly took the slack out. Had I not been properly prepared to handle the situation, I could have lost my leg. Professionals are trained and are properly insured for work under hazardous conditions. You as a homeowner do not have to take the risk. Let the professional who is equipped for the job do it.

A professional tree climber can make the art of tree pruning or removal appear easy. The ease with which he works depends on physical strength, knowledge of tree structure, ability to use equipment, use of ropes and knots, and, most of all, the ability to combine these characteristics.

Before discussing climbing techniques, I want to call your attention to the climbing equipment needed. These are pictured in Figure 1, and the caption lists prices.

The equipment shown is minimal; we should add a 24 ft. extension ladder and a small chain saw as standard equipment for most climbers. The time saved with these two items more than justifies their expense; the approximate cost for both items varies from $195 to $225. So it costs approximately $400 before a climber leaves the ground. Most professional climbers maintain their own basic equipment because their safety on the job depends on the

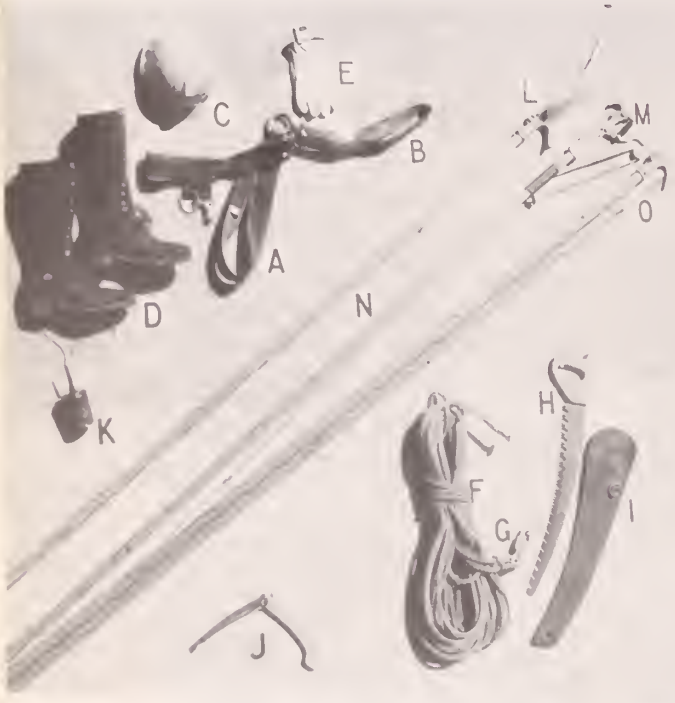


Figure 1

	Price (1972)
A. No. 3 safety saddle*	$ 26.95
B. 6' safety line with snaps	5.25
C. safety cap	3.98
D. No. 676 16" laced boot (pair)	33.00
E. gloves (pair)	5.00 av.
F. ½" 120' Esterlon climbing line	31.20
G. No. 10 positive locking safety snap	5.05
H. No. 14 Atkins silver flash (hand saw)	6.95
I. 26" S. C. scabbard for saw	13.90
J. No. 2 folding saw 9" blade, 7 points/inch	4.40
K. No. 2 can ¾" oval brush	2.59
L. No. 20 pole pruning saw and mead	5.40
M. No. PH3 Marvin pruner	13.50
N. 12' basswood pruner poles	15.36
O. round pruner pole ferrule	1.55
	$174.13

*All listed items and prices are from Karl Kuemmerling, Inc., 4536 Lincoln Way East, Massillon, Ohio 44646. Items on list are personal preferences and are not necessarily the cheapest items available.

Figure 2



quality and condition of the equipment they use.

Obviously, equipment alone does not make a good climber. He should know a great deal about tree structure. That is not to say he must know the complexities of the root structure, the maximum heights, and reproductive characteristics of most trees. What he must know is the internal strengths of trees, the normal habit of growth, and to some degree the severity of pruning a tree will withstand. We can understand this better with some simple examples.

Because of the internal structural strength of the weeping willow, we cannot climb it in the same manner as the oak. A climber can tie-in in an oak on a three-inch upright (a terminal branch or a leader) with a side branch as small as an inch and a half. In the willow tree, he would not trust an upright less than five or more inches in diameter and a side branch of two or more inches. Certainly, the habit of growth of the willow requires more maintenance than the oak. The prolific growth of the willow may require annual pruning while the slower growing oak may only need pruning every third or fourth year. The limbs of a willow can be cut anywhere and growth will regenerate; however, if the oak limb is not cut back to a side branch at least 1/3 the size of the limb being removed, the remainder of the limb may die back.

Another important structural characteristic is the bark of the tree. The oak's bark is generally very thick and deeply furrowed. This thick protective bark allows us to remove many of the internal branches that interfere with spraying for insects. They do not add beauty and generally die out from lack of sunlight. This practice is good for most thick-barked trees; however, not all trees are thick-barked. For example, the red maple has very thick bark on younger branches. The removal of most of the internal limbs and sucker growth on this tree could result in sunscald on the major limbs. Sunscald blisters the bark, which separates at the cambium causing girdling of the branches, openings in the bark where insects and disease can enter, and possibly death in the upper portions of the affected limbs.

knottier problems

Assuming the climber now has the required equipment, the knowledge he needs and the physical stamina, he still is not ready to climb. A thorough understanding of the use of ropes and knots must be acquired. The most commonly used knots in professional tree climbing are taut-line hitch, bowline, running bowline, figure-of-eight, sheet bend and clove hitch with one or two half hitches. To learn these knots and to gain a more thorough understanding of rope and its uses, refer to *Tree Preservation Bulletin No. 7,* "Rope Knots and Climbing," for sale by the Superintendent of Documents, U.S.

continued

JOB, NOT A SPORT



Figure 3

Figure 4



Figure 5



photos by Andrew W. Moore

Figure 2. Climber shinnies to the first limb.

Figure 3. Climber entering the tree with a leg over the first limb.

Figure 4. Andrew Moore puts his rope where he needs it with the use of extension poles.

Figure 5. Climber uses rope to put himself into the tree.

Government Printing Office, Washington, D.C. This inexpensive bulletin, 20 cents, covers knots in more detail than I can here.

Now, we come to how the climber dresses. A climber must wear rugged, snug-fitting work clothes. Loose fitting clothes will snag on small stubs and sucker branches. Jeans with tapered legs are best as they can be wrapped around the ankle and tucked inside the sock without pinching the ankle when the boot is pulled on and laced up. The boot should have a composition or a neoprene cord sole and heel and leather uppers (top portion of boot). These materials insure good footing and do not damage the bark of the tree. Any good, snug, long-sleeve work shirt is sufficient. Do not use gloves with gauntlets (wrist protection) because they tend to catch on snags. The band inside the safety hat should be adjusted as tightly as is comfortable. Now the climber inspects the equipment he is going to use for the climb.

It's important that the climber check his safety saddle waistband for saw cuts and worn or torn fibers. The safety saddle waistband is worn just below the belt. That allows the seat strap to fall just below the climber's bottom to a comfortable position for working in the tree when the safety rope is snapped into place. Nylon saddles are recommended for their strength and durability. The climber generally prefers the single seat to the twin leg straps; the leg straps rest against pressure points of the upper leg and can interrupt blood circulation when worn for extended periods of time. Leather is too heavy and cumbersome to work in; it also mildews and rots and requires more maintenance.

The climber also chooses his ropes with care. They must be inspected before each day's work for saw cuts, worn or torn fibers and for wear on the short end used to tie the taut-line hitch. The ½ in. esterlon rope is preferred because it does not rot or mildew if it gets damp. Manila fibers tend to break down with use and last less than one-third as long as esterlon. Nylon is not used because it stretches under tension and burns (melts and forms a crust) when knots are moved along the line too fast.

Two final small but important items are necessary for the climber to transport needed materials wherever he goes in the tree. One is a scabbard for the saw; the saw is first disinfected with wood alcohol or some other disinfectant and then placed in the scabbard after it is clipped to the saddle. The second item, a paint pot, is also attached to the clip.

After these items are in place, the climber clips on a 6 ft. safety line and loops it over his shoulder so that it is not in his way when he climbs. Once he is dressed and equipped, the climber checks out the tree to see where he will crotch his rope when he gets to the top. The rope should go as close to the center of the top of the tree as possible. That will ease movement throughout the tree after he is tied in.

entering the tree

You can enter a tree one of two ways without using a rope. The easiest way is to place the ladder in a position that allows you to step right onto one



Figure 6



Figure 7

Figure 8



of the lower limbs. When positioning the ladder, we allow about 3 ft. between the base of the tree and the base of the ladder for each 10 ft. of ladder. If you cannot reach the lower limbs with the ladder, there are three choices left. If the trunk diameter is small enough to reach around comfortably, you may shinny to the first branch. This approach should not be used for a distance of more than 15 ft.; it is the most strenuous climbing technique used. It involves locking the arms around the trunk, bringing the left leg (instep and shin) up under you, and locking the right calf and thigh around the trunk (see Figure 1). Then, using the leg grip, stretch the arms upward taking another grip and continue until you reach the first limb. Grasp the first limb with both hands far enough out from the tree to swing the right leg up over the limb. Pushing with the left leg, pull over to the top of the limb (see Figure 3). Needless to say, this entry is strictly for the professional climber who uses it to save taking the time to put his rope in first.

A climber can enter the tree by putting the rope in first when the distance from the ground to the first limb is from 30 to 50 ft. This can be done accurately by using extension poles to put the rope exactly where it is needed (see Figure 4). Now the climber can pull himself into the tree with the rope or he can climb the rope with the footlock (see Figure 6).

Once the climber gets into the tree, he climbs to the prepicked crotch high in the center of the tree. He is careful not to grab dead limbs on the way up, and he keeps his weight as close to the trunk as possible (see Figure 7). At the top, he puts his safety line through the crotch of the tree, snaps it to his saddle, and ties his taut-line hitch.

Once the climber gets to the top, he is ready to prune the tree. He starts by cleaning out the dead wood, sucker branches, and any interfering branches he can reach from where he is crotched. This should include the entire upper portion of the normal tree. As he finishes that area, he lowers himself using the taut-line hitch, to a place where he can stand on a lower limb. Both hands are used when pruning; feet and rope are used for balance and position. On small limbs, one hand supports the limb and the other cuts it off.

There is more to professional climbing than meets the eye. Remember, a professional tree climber can make the art of tree pruning or removal appear easy. He has learned how to combine physical strength, knowledge of tree structure, use of equipment, ropes and knots. These skills are the difference between life and death and not a sport or game for the amateur. Let us do the pruning; if you are tempted to try your climbing skills, test them on the mountain trails.

Andrew Moore has been a professional tree man for 14 years. He is a member of the International Shade Tree Commission Committee for Developing Training Courses for Tree Climbers. Moore is also a member of the New Jersey Federation of Shade Tree Commissioners as well as a member of the American Forestry Association. Self-employed as a tree surgeon, Moore is in the process of moving Mayland Professional Tree Surgeons to State College, Pa.



Figure 9

Figure 10



Figure 6. A climber can use the footlock and climb the rope to enter the tree.

Figure 7. Climber keeps his weight close to the trunk during the climb.

Figure 8. Climber tying into high central crotch in the tree.

Figure 9. Using the rope for balance and support, climber prunes ends of limbs 30 ft. from trunk.

Figure 10. Rope and safety saddle allow climber maximum safety and freedom in the tree. Instructor Andrew Moore showing a class in Fairmount Park proper descent from an oak.

THE
TYLER ARBORETUM
[illegible] • PA 19060
[illegible] 5431

CIMICIFUGA RACEMOSA



Many people are familiar with the names of many wild flowers. Jack-in-the-pulpit, bloodroot, goldenrod and may apple are their old friends. Others have never become widely known by name to the town-dweller who only frequents the countryside occasionally. The subject of this article is one of these less commonly known wild flowers, and yet it has accumulated many common names: black snakeroot, black cohosh, rattletop, rattlesnake root, squawroot, and fairy-candles. This last attractive name is used by Dr. Edgar Wherry, and well describes the white, slender racemes of *Cimicifuga racemosa.*

If you walk in the woods at the Tyler Arboretum in July, you should become acquainted with this stately and graceful plant. The spires of small white flowers rise from four to six or more feet above a mound of leaves that are cut into deeply toothed leaflets.

In the woodland shade, this is our most conspicuous native summer-flowering plant at Tyler. The flowers of spring hasten to grow and bloom, and some have seeded and disappeared until another spring while the cimicifuga is taking its time to develop its handsome foliage, and then send up its flowering wands.

There are about a dozen species of *Cimicifuga* (pronounced simisifuga). The name is derived from *cimex,* a bug, and *fugo,* to drive away, and the common name of the whole genus is bugbane. The Eurasian species *C. foetida* is said to be used in Siberia as a bug-chaser. A variety of this, *C. f. intermedia,* is a charming plant for the shady garden, blooming in autumn, the spires reaching three or four feet. It is usually sold under the name *Cimicifuga simplex,* and there is a cultivar called 'White Pearl.' No doubt nurserymen are prudent to avoid the name *foetida.*

Another American species, *C. americana,* occurs in the Allegheny mountains to the west of us. It is rather similar to *C. f. intermedia,* and is also an autumn bloomer.

These are the only cimicifugas I know at first hand, and they are worthy additions to any shady planting.

There are four plants called cohosh—very confusing. Our *Cimicifuga racemosa* is the black cohosh, and its sister, *C. americana,* the mountain cohosh. Near relatives, the baneberries *(Actaea)* are called cohosh, and *Actaea pachypoda,* with white berries, is called white cohosh. The blue cohosh is *Caulophyllum thalictroides.* Both black cohosh and blue cohosh were used medicinally by eastern American Indians, and the word cohosh is said to be derived from an Indian word.

From John Bornemann, whose family firm has long prepared homeopathic remedies, I learned about their use. The active principal in cimicifuga is cimicifugin. It has a relaxing effect, and is used in treating rapid pulses, vertigo, tremors and rheumatism. It has been used in both allopathic and homeopathic medicine since 1831, but I suspect that its use spread from Indian to white settler long before that. The blue cohosh is used in childbirth. Looking back in my Gray's *Manual of Botany* I found that the blue cohosh is also called papoose-root.

I wonder if either of these plants played a part in the so-called Indian remedies that were peddled around a hundred years or more ago. Whether they were or not, it is true that some of our native plants have been nearly exterminated because they were so thoroughly sought out and dug up for their use in medicine. We are lucky to have the black cohosh—the fairy-candles—still lighting the midsummer woods at the Tyler Arboretum.

●

by Gertrude S. Wister

OXYDENDRUM ARBOREUM

On the grounds of the Morris Arboretum in Chestnut Hill is a study in youth and age. Two specimens of *Oxydendrum arboreum,* variously called the sorrel tree, sour wood or lily-of-the-valley tree, present a contrast worth examining. The veteran, a tree about 40 ft. in height, is north of the area where the Morris mansion once stood off Meadowbrook Lane. The tree is noteworthy for its interestingly furrowed bark, deeply carved in a striking pattern, even if age has impaired its naturally symmetrical, slender form. The younger specimen, a better example of what oxydendrum will grow to look like in the home landscape, may be found on the edge of the heath garden. Its smooth bark hardly makes it look like "kissin' kin" to its senior.

The heath garden specimen is so situated because *Oxydendrum arboreum* is a member of the Ericaceae family, as its little bell-shaped flowers immediately suggest. An American native, one of its peculiarities is that it is so seldom used by the American gardener, for like the ubiquitous dogwood, it is a tree for all seasons. Its small size, also like the dogwood, commends it to anyone with space for a tree.

The sour wood is a mid-summer bloomer, when very little else is putting forth. It bears drooping racemes of fragrant white flowers quite similar to the lily-of-the-valley, or the *Pieris japonica* of early spring. In full bloom it has a plumy appearance, as attractive to the bees as it is to *homo sapiens.*

But oxydendrum, the only known member of its genus, waits for fall for its most dramatic display. Its polished, leathery leaves turn a brilliant scarlet in early fall, and the leaves persist for a full six weeks. Meanwhile, the flowers have dropped, and hard little seed capsules have formed in their place, indistinguishable at a distance from the original blossoms. The effect of the capsules against the brilliant foliage is spectacular. The capsules also persist well into winter.

Like all Ericaceae, oxydendrum favors the acid soil generally prevalent in the Philadelphia area, although it is reputed to tolerate up to a nearly neutral soil, if it has sufficient moisture. Generally thought of as a southern tree where it grows considerably higher than in this area (up to 70 ft.), it is nevertheless hardy into eastern Massachusetts and is perfectly hardy in Pennsylvania. In the wild it is found in piedmont or mountainous regions from Pennsylvania to Florida, and grows most luxuriantly in the Big Smokies of Tennessee. Well-drained, gravelly soil on ridges above stream banks is its natural habitat.





For the homeowner seeking a specimen tree, to add height or accent to a shrub border, oxydendrum is unexcelled. A very slow grower, it can also be planted in a tub for the patio. (City dweller with a pocket-sized backyard, take note.) Average height in this area is about 20 ft., so don't plant it for a shade tree! Oxydendrum can take full sun or partial shade, is essentially pest-free and needs little or no pruning. What more could a gardener ask? Maybe that it come out earlier in the spring. If it has a drawback, it is that its leaves do emerge quite late, but its fine figure—drooping lower branches and an oval crown—makes it a handsome tree in or out of foliage. And when the spring leaves do appear, they are of the same translucent peach color as the new growth of pieris. Mature leaves are shaped like those of the peach tree, pointed at both ends and perfectly symmetrical, and of a lustrous bronzy green.

Oxydendrum is most at home among other acid-loving plants such as rhododendron, azalea, and laurel. For maintenance purposes, it makes good sense to so place it, too. As companion plantings, broad-leaved evergreens set it off well, but it is probably shown to best advantage against tall conifers. At the Morris Arboretum, the oxydendrum in the heath garden is so displayed that a huge *Cedrus atlantica* rises in the background, an exquisite duet. An old copy of the *Gardener's Chronicle,* an English publication, suggests planting oxydendrum where it will catch the rays of the late afternoon sun, a bonny idea. The English prize the oxydendrum, incidentally. It was first imported there in 1752 and grown from seed. It is claimed that it propagates easily from seed, but since it is a very slow grower, and unless you are very long on patience, it is probably best to seek nursery stock.

The name oxydendrum comes from the Greek *oxys,* or sour, and *dendron,* wood. To find out why, pick off a leaf and have a chew. You will find it has a distinctly acid taste, although not unpleasant, for hunters in the southern woods traditionally chew on sorrel leaves to slake their thirst. As one might suspect, our ancestors put the

continued

by Ellen V. P. Wells

leaves to medicinal use, and according to Bailey, used them to brew a tonic, treat fevers, and as a diuretic.

One of the first items that drew oxydendrum to my attention is its fame as a source of honey. It is produced in quantity on mountain farms in the south and is treated with the same respect as first-run maple syrup is in New England. Travelers along the inland waterway buy it from lock-keepers. (At least I hope they still do!)

In a *Natural History of Trees,* Donald C. Peattie says: "One buys sour wood honey as one buys any such rare product from its producers—not in a commercial spirit, paying for it and carrying away the wares—but with all due ceremony observed between a collector and a creative artist."

The wood of the oxydendrum is reddish brown and extremely close-grained, taking a lustrous polish. Because of its hardness it was used for machinery, tool handles and bearings. It is also known in the south as arrow-wood because men of pioneer days used the wood to make arrows, particularly the wood from long slender shoots where the trees had coppiced.

But one needn't be a deerslayer or a beekeeper to benefit from *Oxydendrum arboreum.* As a grace note for the small property or judiciously planted on the larger one, it will perennially please.

●

Hand pruner, anvil type



book list

books about pruning

These books are available through the PHS Library. I believe they will supplement and enhance the information contained in this issue and the July 1973 issue of *The Green Scene.* Please come in or call me if you would like to borrow one of the books.

Julie Morris
Horticultural Librarian

How to Prune Almost Everything
Baumgardt, John Philip
Barrows, New York, 1968. 192p.

Pruning Handbook
Brooklyn Botanic Garden
Brooklyn Botanic Garden, Brooklyn, N.Y., 1966. 81p.

The Pruning of Trees, Shrubs and Conifers
Brown, George E.
Winchester Press, New York, 1972. 351p.

The Pruning Manual (based on *The Pruning Manual* by Liberty Hyde Bailey)
Christopher, Everett P.
Macmillan Co., N.Y., 1960. 320p.

Plant Pruning in Pictures
Free, Montague
Doubleday, New York, 1961. 286p.

Pruning Handbook
Hudson, Roy L.
Sunset
Lane Books, Menlo Park, Calif., 1952. 80p.

The Art of Shaping Shrubs, Trees and Other Plants
Ishimoto, Tatsuo
Crown, New York, 1966. 125p.

The Lorette System of Pruning
Lorette, Louis
Martin Hopkinson, London, 1925. 166p.

Pruning Made Easy
Steffek, Edwin F.
Holt, New York, 1958. 120p.

classified ads

LORD AND BURNHAM GREENHOUSES for the care, cultivation and protection of tender growing plants; painstakingly custom designed to your specific horticultural needs, flawlessly erected, and delivered on time every time. Inquiry welcome. QED, INC., Villanova, PA. 688-4825.

Hundreds of satisfied green tenants . . . From the plant people who build greenhouses . . . Not builders who are green about plants.

Happy, active family with children needs live-in couple. Gardening, greenhouse background helpful. Apartment, board, Blue Cross. Start no later January 1. State salary, references with reply. Box 115, Rockland, DE 19732.

Gardening is going places—are you with it? THE AVANT GARDENER brings you all the "firsts"—new plants, products, techniques, with sources—plus full features, special issues. A unique horticultural magazine-news service, 24 issues a year, over 500 articles. Curious? 3 sample copies $1.00 Serious? $8.50 for a full year. P.O. Box 489, New York, NY 10028.

GROWING THOUSANDS. Plants for special uses. Partial list. **For Light Shade:** pachysandra, vinca Bowles, ajuga, hollies, rhododendron, hellebore, liriope, astilbe, etc. **For Rock Gardens:** heathers, dwarf junipers, *Ilex belleri,* perennials. **For Formal Gardens & Borders:** boxwoods, yews, dwarf spruce, cypress, etc. **For Bonsai (starters):** dwarf evergreens, Japanese maple, cotoneaster. **Our Work:** Ground Improvement - Soil Testing - Selection - Arrangement Design. 40 years experience. Personal service. Samuel Knight Cowell, Roxborough Nursery. List. Sales by appointment only. Call 828-3534, 6 PM best.

Horticultural Consultant Service. I have a BS degree in Horticulture from Penn State, with a 30-year background in the field of Horticulture and general Landscaping. I can help solve any problems or go over your property and make recommendations that could prevent problems.

Naturalistic to formal settings, plants and plant problems, site preparation and grading problems. Consulting done on a fee basis. Hugh J. Peeling, P.O. Box 5, Concordville, PA 19331. Phone (215) GL 9-3192.

Specialists in Japanese, city, naturalistic gardens. Featuring volcanic rock, ornamental pools, waterfalls, terraces. Plantings designed by Landscape Architectural Service Department, installed by expert landscapemen. J. Franklin Styer Nurseries, Concordville, PA 19331. Telephone GL 9-2400.

Wanted Customers for superior varieties such as: *Acer rubrum, Cercidophyllum japonicum, Cryptomeria japonica, Enkianthus campanulata, Hydrangea quercifolia, Ilex glabra compacta, Ilex* 'Nellie Stevens,' *Juniperus chinensis sargent, Pinus densiflora umbraculifera, Stewartia* pseudo-camelia, *Styrax obassia.* All, and more available from Rose Valley Nurseries, 684 S. New Middletown Rd , Media, Pa. 19063 Telephone Ben Palmer, TR 2-7206

LADEW TOPIARY GARDENS, (Md. 146) Jarrettsville Pike, Monkton, Md. Open weekends: May through October, 11 A.M. to 4:30 P.M., admission $2.00. Weekdays by appointment. Special tour rates. For information: call 301-692-6069 or write Box 58, Monkton, Md. 21111.

Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. Minimum rate $5.50 (covers up to 35 words). Additional words 20¢ each. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Patricia M. Cain, THE GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

THE green scene

Index to Volume 2, September 1973 through July 1974*

*(Issued bimonthly: September/October, November/December, January/February, March/April, May/June, July/August. Listing shows only first month listed on bimonthly issue date.)

SUBJECTS

A

Aechmea fasciata—Valais....Nov., 24
Air Layering—Ballard.....May, 13
Ambler, Growing Annuals at—Anders.....May, 28
Annuals, Growing at Ambler—Anders.....May, 28
Apartment Horticulture—Simpson.....Sept., 7
Azaleas in the Delaware Valley—West.....Mar., 16

B

Begonia 'Cinderella' White—Ballard.....Nov., 23
Birds, Just for the—Rogers.....Jan., 2
Bonsai, Nature's Pruning Inspires—Stowell.....July, 14
Books and the Green World
Linnaeus & Garden Literature..Sept., 20; Herbs at Christmas...Nov., 18; More than Plants...Jan., 26; Garden Art from Far Away Places...Mar., 29; Dried and True...May, 22; Pruning...July, 32
Brussels Sprouts—Lowe.....May, 31

C

Camellia japonica—Brubaker.....Sept., 24
Cedrus libani—Kemmerer.....Nov., 24
Cercidiphyllum is a Regal Tree, From First Blush to Final Scarlet—Wells...Jan., 24
Choice Is One Out of Ten, When the, What Do You Do?—Lester...Jan., 16
Christmas Creche Made of Dried Plant Material—Truitt.....Nov., 12
Chrysanthemum Red Rover—Mackinney.....Sept., 24
Cimicifuga racemosa—Wister.....July, 30
Climbing Trees is a Job, Not a Sport—Moore.....July, 26
Contrasts for Winter Garden Beauty—Jones.....Jan., 29
Cut and Dried—King.....Nov., 8
Cyclamen cilicicum—Baldwin.....Nov., 25
Cyperus alternifolius—Laden.....Jan., 33

D

Digging for Information—Lindemann.....Bimonthly
Drawing Out the Jeffersonia—Klaber.....Mar., 26

E

Editorials: Organizations of Gardners ...Sept., 1; Fairmount Park...Nov., 1; Horticulture in the Delaware Valley ...Jan., 1; By Any Other Name... Mar., 1; It's About Time We Worked Together...May, 1; The Kindest Cut of All...July, 1
18th Century Garden, Succession of Bloom in the PHS—Garra.....Mar., 3

F

From First Blush to Final Scarlet, Cercidiphyllum is a Regal Tree—Wells.....Jan., 24
Fruits, The Queen of—Gyer...Jan., 13

G

Gardener Rides the Reading, A—Garra.....May, 2
Gardener's Word Guide—Horner.....Sept., 23
Gateway Nursery, The: A Bicentennial Idea.....Sept., 2
Geranium - Mrs. Henry Cox—Kaufman.....Jan., 33
Glossary of Terms, A Not So Technical.....Mar., 7
Growing Annuals at Ambler—Anders.....May, 28
Gymnocalcycium mihanovichi friedericki—Lee.....Jan., 32

H

Hamamelis Blooms, When All Else Fails—Wells.....Mar., 22
His and Her Rock Gardens—Kistler, John and Anita.....May, 7

I

It's About Time We Worked Together —Lighty.....May, 1

J

Jeffersonia, Drawing Out the—Klaber.....Mar., 26
Just for the Birds—Rogers.....Jan., 3

K

Keeping Trees Fit to Survive—Poe.....July, 20

L

Light, Some, on the Garden in Your House—Stephenson.....Nov., 14
Linnaeus & Garden Literature—Lawrence.....Sept., 20

M

Magnolia virginiana, The Sweet Bay—Wister.....May, 26
Mahonia bealei—Wister.....Mar., 24
'Margaret Mary'—Ryan.....Mar., 32
Meehania—Redding.....Mar., 32

N

Nasturtium Gleam—McFadden.....May, 32
Nature's Pruning Inspires Bonsai—Stowell.....July, 14
Needed: 10,000 Trees—Welgoss.....Nov., 2
Nyssa sylvatica—Rosengarten, Jr. Sept., 25

O

Oxydendrum arboreum—Wells.....July, 31

P

Parnassia—Sargent.....Sept., 25
Pentas lanceolata—Breuninger.....Jan., 32
Perennials for Pleasure.....Mar., 7
Podocarpus elongata—Korninsky.....May, 33
Pruning: Climbing Trees is a Job, Not a Sport—Moore...July, 26; Keeping Trees Fit to Survive—Poe...July, 21; The Kindest Cut of All...July, 1; Large Shrubs — Melrose...July, 10; Nature's Pruning Inspires Bonsai—Stowell...July, 14; The Topiary Garden — Baker...July, 6; The Tree's Plumbing System—Svec...July, 2
Melrose.....July, 10

Q

Queen of Fruits, The—Gyer...Jan., 13

R

Rock Gardens, His and Her—Kistler, John and Anita.....May, 7

S

Salt: Ice Free Walks & Dead Plants—Daniels.....Nov., 20
Some Light on the Garden in Your House—Stephenson.....Nov., 14
Some Zucchini in a Tub—Brubaker.....Mar., 12
Succession of Bloom in the PHS 18th Century Garden—Garra.....Mar., 3
Sweet Bay, The, *Magnolia virginiana*—Wister.....May, 26
Symphony in Daffodils, A—Miles.....Sept., 16

T

10,000 Trees: Needed—Welgoss.....Nov., 2
Topiary Garden, The—Baker.....July, 6
Trees as Accident and Basket Cases... Jan., 9
Tree's Plumbing System, The—Svec.....July, 2
Trees, Fit to Survive, Keeping—Poe.....July, 20
Trees is a Job, Climbing, Not a Sport —Moore.....July, 26
Trillium grandiflorum—Wherry.....Mar., 33
Two Heads Are Better Than One—Lindemann.....Sept., 12

W

When All Else Fails Hamamelis Blooms —Wells.....Mar., 22
When the Choice Is One Out of Ten, What Do You Do?—Lester...Jan., 16
'Windbeam' A.E.—Jones.....Mar., 33
Winter Aconite—Wister.....Jan., 22
Winter Garden Beauty, Contrasts for —Jones.....Jan., 29
Wisteria Means May, However You Spell It—Wells.....May, 24

Y

Yucca filamentosa—Smedley.....May, 32

Z

Zucchini in a Tub, Some—Brubaker.....Mar., 12

AUTHORS

A

Anders, Viola—Growing Annuals at Ambler.....May, 28

B

Baker, Robert — The Topiary Garden.....July, 6
Baldwin, Nancy — *Cyclamen cilicium*.....Nov., 25
Ballard, Ernesta D.—Editorials: Sept., 1; Jan., 1; July, 1; Begonia 'Cinderella' White...Nov., 23; Air Layering ...May, 13; The Kindest Cut of All... July, 1
Breuninger, Bobbie — *Pentas lanceolata*.....Jan., 32
Brubaker, M. M.—*Camellia japonica*... Sept., 24; Some Zucchini in a Tub... Mar., 12

D

Daniels, Roland—Salt: Ice Free Walks & Dead Plants.....Nov., 20

G

Garra, Martha Ludes—Succession of Bloom in the PHS 18th Century Garden...Mar., 3; A Gardener Rides the Reading...May, 2
Gyer, John F. — The Queen of Fruits.....Jan., 13

H

Horner, Marianna — Gardener's Word Guide.....Sept., 23

J

Jones, Gordon E. — 'Windbeam' A.E.....Mar., 33
Jones, Russell O.—Contrasts for Winter Garden Beauty.....Jan., 29

K

Kaufman, Doris M.—Geranium - Mrs. Henry Cox.....Jan., 33
Kemmerer, Harleigh and Roberta — *Cedrus libani*.....Nov., 24
King, Mrs. H. B. — Cut and Dried.....Nov., 8
Kistler, Anita — His and Her Rock Gardens.....May, 10
Kistler, John S. — His and Her Rock Gardens.....May,7
Klaber, Doretta — Drawing Out the Jeffersonia.....Mar., 26
Korninsky, Joseph W. — *Podocarpus elongata*.....May, 32

L

Laden, Eleanor — *Cyperus alternifolius*.....Jan., 33
Lawrence, George H. M. — Linnaeus & Garden Literature.....Sept., 20
Lee, Henry F. — *Gymnocalycium mihanovichi friedericki*.....Jan., 32
Lester, Lee — When the Choice Is One Out of Ten, What Do You Do?... Jan., 16
Lighty, Richard W. — It's About Time We Worked Together.....May, 1
Lindemann, Edward — Digging for Information...Bimonthly; Two Heads Are Better Than One...Sept., 12
Lowe, Jeannette — Brussels Sprouts.....May, 31

M

Mackinney, Joy — Chrysanthemum Red Rover.....Sept , 24
Melrose, David — Pruning Large Shrubs.....July, 10
McFadden, Margaret — Nasturtium Gleam.....May, 32
Miles, Bebe — A Symphony in Daffodils.....Sept., 16
Moore, Andrew — Climbing Trees is a Job, Not a Sport.....July, 26
Morris, Julie — Books & The Green World: Herbs at Christmas...Nov., 18; More Than Plants...Jan., 26; Garden Art from Far Away Places... Mar., 29; Dried and True...May, 22

P

Poe, David — Keeping Trees Fit to Survive.....July, 20

R

Redding, Patrick—Meehania...Mar., 32
Rogers, Charles W. — Just for the Birds.....Jan., 3
Rosengarten, Jr., A. G. — *Nyssa sylvatica*.....Sept., 25
Ryan, Robert — 'Margaret Mary'.....Mar., 31

S

Sargent, Ralph M. — Parnassia.....Sept., 25
Schnadelbach, Raymond Terry — Fairmount Park.....Nov., 1
Simpson, Phyllis — Apartment Horticulture.....Sept., 7
Smedley, Mary Jane — *Yucca filamentosa*.....May, 32
Stephenson, Libby — Some Light on the Garden in Your House...Nov., 14
Stowell, Jerald P. — Nature's Pruning Inspires Bonsai.....July, 14
Styer, J. Franklin — By Any Other Name.....Mar., 1
Svec, Leroy — The Tree's Plumbing System.....July, 2

T

Truitt, Henrietta G.—Christmas Creche Made of Dried Plant Material...Nov., 12

V

Valais, Madelyn — *Aechmea fasciata*.....Nov., 24

W

Wells, Ellen Van Pelt — From First Blush to Final Scarlet, Cercidiphyllum is a Regal Tree...Jan., 24; When All Else Fails Hamamelis Blooms... Mar., 22; However You Spell It, Wisteria Means May...May 25; *Oxydendrum arboreum*...July, 31
Welgoss, Teddy — Needed: 10,000 Trees.....Nov., 2
West, Franklin — Azaleas in the Delaware Valley.....Mar., 16
Wherry, Edgar T. — *Trillium grandiflorum*.....Mar., 33
Wister, Gertrude — Winter Aconite... Jan., 22; *Mahonia bealei*...Mar., 24; The Sweet Bay, *Magnolia virginiana* ...May, 26; *Cimicifuga racemosa*... July, 30



Don't be fooled; these men have as much knowledge about trees as they have courage. Big trees require big skills. See page 20.

PENNSYLVANIA HORTICULTURAL SOCIETY
3 1827 00018551 1